The Builder.

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The Law Lords on the Liability of Employers for Injuries to Workmen.

THE judgments of the House of Lords are nearly always noticeable for their lucidity and common-sense. There are several reasons why this is the case. The irrelevant issues which are so often raised have been disposed of in the Courts below; the facts have generally been ascertained beyond dispute; and what is more important, the House of Lords, being the highest Court of Appeal, is unfettered by any decisions of any other Court. It can thus dispense with technical and troublesome reasoning, with a view to either escape from or fall in with previous decisions; and it can,—which is more important,—put the law right if it has been wrongly decided by the Courts below. These characteristics of this tribunal are apparent in two important cases which are reported in the November number of the "Law Reports," and which seem to place some parts of the law relating to employers and employed on a clear and permanent footing. These two cases are Smith *v.* Baker & Sons and Johnson *v.* Lindsay & Co. The first was a case under the Employers' Liability Act, 1880, and appears to make the law clear in regard to the respective rights and liabilities of workman and master in respect of injuries received by a workman in the course of his employment, in connexion with the defence that a risk had been voluntarily incurred by the workman. There is a well-known legal maxim, *Volenti non fit injuria*, or, as amplified and stated by Lord Herschell, "one who has invited or assented to an act being done towards him cannot, when he suffers from it, complain of it as a wrong." The principle embodied in the maxim has sometimes, in relation to cases of employer and employed, been stated thus:—A person who is engaged to perform a dangerous operation takes upon himself the risks incident thereto. That this legal rule is based on common-sense there can be little doubt, but it is necessarily one which requires very careful application, for it may be so loosely applied as to work great injustice, more especially to the employed, and there is no doubt that this has been the case. In this very instance the Court of Appeal construed it in a manner which must be regarded as hard upon the workman, and the same thing has happened in Scotland. In future it is obvious that from the light thrown upon the rule by the House of Lords in the appeal under notice, it must be construed and applied less harshly. To understand the drift of the decision aright, it is necessary to touch shortly on the facts of the case. Perhaps the best summary is contained in the judgment of Lord Watson. It runs thus:—

"The plaintiff was employed by the defendants from December, 1887, until April 13, 1888, in a rock cutting upon the Halifax High-Level Railway. A line of rails, upon which there was a travelling steam crane and tackle, ran along the edge of the cutting, and the quarried stone was lifted and deposited in trucks by means of the crane. The larger stones were secured by winding the chain round them and hitching the end hook into one of its links; the smaller ones were packed in skips or crates. The plaintiff was engaged in loading the crane until the beginning of February, and after that date in assisting to drill holes for blasting. On April 13 he was turning a drill-rod, which two of his fellow-workmen struck alternately with their hammers, when a large stone, which was in course of being raised by the crane, fell upon him, and inflicted the injuries complained of. His fellow-workmen saw the falling stone just in time to get out of its way, but the plaintiff, who was stooping at his work, had not time to make his escape.

"No evidence was led on either side as to the character of the stone which fell, to the condition of the chain, or to the actual mode in which the stone was secured. It appears to have been the practice during the whole period of the plaintiff's employment to permit the crane-load, whenever it was found convenient, to be swung directly above the workmen engaged in drilling. At its first start the load swung clear of them, but after it had attained some elevation, the arm of the crane was "jibbed," or deflected to one side or the other, as suited the convenience of those who were loading the trucks. Until the crane was jibbed, the plaintiff and others employed in drilling had no means of knowing whether its load would or would not pass over their heads.

"Neither of the parties disputed at the trial that the practice in question involved some degree of peril to the workmen employed in drilling. The plaintiff in his evidence stated that he had been long enough at that kind of work to know that the practice was dangerous. He also said: 'I had been at the same class of work in the same cutting. They were jibbing over our heads every day.' 'Sometimes we could see the stones being craned up, and when we saw them we got out of the way.' Hanson, a witness for the defendants, who was their foreman in charge at the time of the accident, said that 'the men ought to have stopped work while the stone was being jibbed round. That would be the safe way.' He admitted that no notice was given them; and he also said, 'If the men left their work every time the crane jibbed, it would take two and a half hours to do one hour's work.' There is evidence to the effect that one at least of his fellow-workmen had previously complained to the foreman of the danger of slinging stones over their heads. There is no evidence to show that the practice was necessary to the conduct of the defendants' operations, and could not have been discontinued without interruption of their work."

As we have already stated, the House of Lords considered that the rule did not apply to these facts. It is obvious, as Lord Watson pointed out, that a mere continuing at work with knowledge of danger will not necessarily imply an acceptance of the risk, and, as Lord Herschell said, the man did not either invite or assent to the act which he complained of as a wrong. It seems, indeed, to be clear that there must be a real voluntary acceptance of the risk, a full knowledge of the danger, and a possibility of either escaping from it or encountering it. It was argued that under the circumstances of such a case as the present the workman should not have continued to go on with his labour. But there was only a possibility of risk, not a certainty of it, and a continuance in service with mere knowledge of the risk caused by the employer's negligence did not imply an acceptance of the risk. It has, of course, to be borne in mind that there was no actual acceptance of the risk; it was a question of whether there had been an implied accept-

ance. It is, then, obvious that, without strong direct evidence (it may almost be said by means of words of acceptance), a workman can scarcely be regarded as impliedly accepting a risk because he does not at once lay down his tools, and declare that he will not go on with his work under such circumstances.

Of course, the nature of the employment is a very material factor in the case; it is clear that if the employment in itself is dangerous, it could scarcely be said that there was not an implied acceptance of such danger by a workman, and in such cases the workman must rely on his own nerve and skill. It would be rash for us to give examples: every reader can formulate them in his own mind. But one thing is apparent now, that the rule must be applied as against a workman with clemency, and that the continuing at work when a risk to life or limb has arisen, does not show an implied acceptance of the risk so as to take away from the employer the liability for his negligence which otherwise attaches to him.

So much for the case of Smith *v.* Baker & Sons. We now turn to that of Johnson *v.* Lindsay & Co., one of greater precision, but, like the first-named, an appeal which overruled not only the decision of the Court of Appeal, but other cases which have hitherto been regarded as good law, and which again is more favourable to the workman than the cases which it overturns.

The point of the decision may be conveniently stated by the summary which is given in the head-note to the official report. It is as follows:—"In an action to recover damages for injury caused by the negligence of the employer's servant, the defence of common employment is not applicable unless the injured person and the servant whose negligence caused the injury were not only engaged in a common employment, but were in the service of a common master." What has been called "the doctrine of common employment" has long been well recognised as a legal rule. Undoubtedly it is an artificial one. The servant is supposed to take the risk of being injured by his fellow servant. As a matter of fact he never contemplates any such possibility. Lord Cranworth in a very well-known case stated that "When several workmen engage to serve a master in a common work, they know or ought to know the risks to which they are exposing themselves, including the risks of carelessness, against which their employer cannot secure them, and they must be supposed to contract with reference to such risks." But this is wholly against common-sense and ordinary experience. A workman no more contemplates, as we have said, carelessness on the part of his fellow workman than the railway traveller contemplates negligence in a signalman. But such is, and has long been, the law. The decision in Johnson *v.* Lindsay & Co. makes the rule less strict than, both in England and in Scotland, it has for some time been. The person who set up the defence of "common employment" must now show that the two men were in his service, not permanently or for a defined time, but at the date of the accident. Let us see what were the facts of this recent and important case. They are shortly but sufficiently stated in the head-note of the report:—"Builders contracted to build a block of houses under a specification prepared by the owner's architect, certain fireproof portions of the houses to be executed by the respondents, who were ironfounders. The respondents contracted with the architect to do their portion of the work, and had no contract with the builders, and were not under their direction or control. While the respondents were carrying out their contract, workmen employed by them in raising concrete to the upper story of the building negligently let a bucket fall on the appellant, who was working in the lower story, in the employment of the builders." In addition to these facts, it should be stated, to make the matter quite clear, that the injured man was engaged and paid by the builders, and that the workmen by whom he was injured were engaged and paid by the respondent. They were thus under distinct employers, and were working quite independently in the same block of buildings. It is surprising that any court could have held that any "common employment" existed in such circumstances. But the courts below the House of Lords held that it existed, while the House itself differed from them without hesitation, thus replacing the law on a sound and satisfactory footing. For there can be no question that the doctrine of "common employment" has been allowed, until it received this check, to extend to an unreasonable degree. This may be clearly seen by a short reference to the facts of Maguire *v.* Russell, a decision in the Scotch Courts. In this case one tradesman had contracted to execute plumbers' work, and another to lay asphalte pavement in the same building. They proceeded to work under independent contracts, and in the course of their operations a workman engaged in asphalting was injured by a hammer which fell through a skylight in the roof, through the negligence of one of the plumbers' servants, and the injured man brought an action against the plumber. The Scotch Judges, on the authority of a case called Woodhead *v.* Gartness Mineral Company, held that the doctrine of "common employment" was applicable, and that the plaintiff could not recover. It is clear that if a similar case now came before the Courts the plaintiff would very properly be entitled to obtain damages. There was no "common master" in the instance just given, and in order to make men, to use a Scotch legal expression not familiar to English ears, except in a literary sense, "collaborateurs," it is essential the men should be working under this common master. Even thus restricted, the rule is an artificial one, based on a legal fiction, and is not unlikely, having regard to the tendency of modern legislation in the interests of labour, to be some day abolished by the Legislature.

In mentioning the possibility of such legislation, we do not thereby imply that it is desirable; but the Employers' Liability Acts were steps in this direction, and there is an inclination, which we cannot hide from ourselves, to legislate in favour of the working man. On the other hand, it should be borne in mind that the doctrine of agency, whereby masters who are perfectly innocent of any personal negligence are held liable for the negligence of their servants by whom some member of the public is injured, undoubtedly is a hardship in a large number of cases. It is also, in the opinion of many competent judges, by no means to the interest of workmen to increase opportunities for litigation, which has a tendency to prevent voluntary assistance by masters or mutual arrangements between employers and employed. The subject is too large, however, to discuss at length at the end of an article which deals chiefly with certain legal points.

NOTES.

ALTHOUGH the carpenters and joiners of London recently on strike agreed, by their representative, "to abide by the award" of Mr. Macvicar Anderson, we are sorry to hear that they are doing so with a very bad grace, and that some of them openly talk of striking again at the very first opportunity, possibly in concert with operatives in other branches of the building trade. At a meeting of the "London Building Trade Committee" held in Southwark on Tuesday evening, one of the speakers is reported (in the *Times* of Wednesday) as having characterised the award as "an outrage on common-sense and a deliberate insult to the intelligence of the workmen connected with the building trade in London." Let us place before the London carpenters and their friends some words extracted from the leading article in our contemporary, *Timber*, for November 21. After quoting Mr. Macvicar Anderson's remarks as to the injury which the recent strike has inflicted upon the trade of the carpenters and joiners of London, our contemporary says:—

"There is no denying the force of them. The dispute which has so imprudently been allowed 'to drag its slow length along' has undoubtedly had effects most detrimental to the British joinery trade, and therefore to an important wood-consuming section of Home industry. An interesting confirmation of this view was afforded us during our recent visit to Scandinavia. We found all the joinery people extremely busy as a direct result of an increased demand from England for foreign joinery. A partner of the big joinery-exporting firm of Stromman & Larsson, of Gothenburg, in speaking with us on this subject said, as far as his firm was concerned they did not care how long the carpenters' strike in England lasted, for the impetus that it had given to their business was remarkable, but however soon it was settled (that was September) they hoped, he added, to retain a good proportion of the newly-acquired connexion. And there is no doubt they and other foreign firms will do so, much to the reduction of the home-made article and the swelling of the army of unemployed British workmen."

These are words which should surely appeal to the "common-sense and intelligence" of the building operatives of London.

WE publish on another page of this issue a *résumé* of a lecture given the other day by Miss Sellers on the subject of Dr. Dörpfeld's theory as to the management of the Greek Theatre. As this theory has been discussed a good deal, and Miss Sellers' lecture gives a comprehensive summary of it, we have thought it would be of interest to put this on record, but certainly with no idea of supporting Dr. Dörpfeld's view, as far as we at present see evidence. The main point over which the controversy arises is in regard to the idea that in the earlier Greek drama of Æschylus and Sophocles there was no raised scene, and that the action all took place on the orchestra level, the main actors being grouped with the chorus. The architectural reasons for adopting this view appear to us exceedingly arbitrary and far-fetched, and in fact tend to show that Dr. Dörpfeld, brilliant and learned archæologist as he is, is not exempt from the typical weakness of the German archæologist, the passion for having a "view" of his own differing from all other people's views: *quot Alemanni, tot sententiæ*. The most curious part of the whole matter is that Dr. Dörpfeld, or Miss Sellers for him (we do not know how that stands), should argue that the Greek drama would have gained in effect from this arrangement. To our thinking, no criticism could be more utterly wrong-headed. The chorus in the Greek drama were not actors, but commentators; their nearest approach to taking part in the action was in the occasional exchange of those curious irrelevant half-dialogues with a principal actor, in a kind of bat-and-ball style, which Lowell has so happily parodied:

"CHORUS. Foolish who bites off nose, his face to spite.
OUTIS. Who fears his fate, him Fate shall one day spurn.
CHORUS. The gods themselves are pliable to Fate.
OUTIS. The strong self-ruler dreads no other sway.
CHORUS. Sometimes the shortest way goes most about.
OUTIS. Why fetch a compass, having stars within?
CHORUS. A shepherd once, I know that stars may set.
OUTIS. That thou led'st sheep fits not for leading men.
CHORUS. To sleep-sealed eyes the wolf-dog barks in vain."

But in general their position is that of abstract comment, lyrical philosophising, on the events and situations of the story. There was therefore every reason for keeping them on a different platform, so to speak, from the actors; their æsthetic function was different. To mix up these lyrical commentators in one group with the actors of the story would be as great a mistake in æsthetic as to put the band in opera upon the stage with the singers; and if Dr. Dörpfeld could succeed in proving that the Greek dramatists did so, we can only

say, so much the worse for the Greek dramatists.

A DRAFT BILL for the Consolidation of the Building Law for London is being shaped out by the Local Government Board, so that it may be introduced next Session. It is still in a preparatory stage, and detailed criticism may well be deferred till the Bill takes a solid form, after a good deal more steady labour. Numerous emendations in the first draft will be necessary, in order that the wording of the Bill may express in a coherent way the best-accepted sense of the existing Acts. Consolidation is evidently the first thing to be done; and a Consolidation Bill will be very useful to us all, even if Mr. Ritchie has to pause before attempting the great work of carrying a good new Statute. Threats of change frequently rumble a long time before the change begins; and, just as the 1855 Act has unexpectedly survived till to-day, the Consolidated Act may last a number of years. The moral is that the work should be well done, and made very complete,—and as logical as possible.

SUGGESTIONS as to an amending Bill seem to have been asked for by the Local Government Board in a good spirit; and we hear of the multitude of counsellors. A conference of delegates from the Local Boards and Vestries is to be held to discuss the subject. The London County Council, as reported on page 389 of our last number, has offered "to submit certain proposed alterations in the existing law, which experience has led us (the Council) to consider desirable." The Practice Committee of the Institute of Architects has been at the task a long time; and the Council of the Institute is, no doubt, now prepared to assist the Minister with reference to each part of the subject. There cannot well be too much activity and sanguine feeling; for the difficulties in the way of framing a new and complete Building Law might make a courageous soul abandon hope. The present Acts are assailed at all points and from all sides,—being deemed too strict by some and too lax by many. The control interferes unduly, some say, with the natural rights of owners; others think it does not do enough in the interests of the general public and the neighbourhoods; and so on to the end of the chapter. Some one will have to cut out a line for himself, and keep to it pretty staunchly. Firmly-established principles, and details revised from time to time, may make things easier in the future,—if we can only agree among ourselves at intervals about what the County Council and the Government should be asked to do. Perhaps some way might be contrived by which this could be done without it being necessary to appeal to Parliament. An Act should live for a fair term of years; but schedules or by-laws should have little claim to permanence. Some Acts last too long, and their persevering existence pains those who would fain revere the wisdom of the State,—a class probably larger now than in any olden days. The Building Act of 1774 "was framed by Sir Robert Taylor, architect to the Bank of England, assisted by the most eminent surveyors and practical men of his day." London managed to pull along and grow rapidly during the seventy years between 1774 and the repeal of that Act in 1844. In 1842 the old reverence for the work of Sir Robert Taylor and the others had, however, grown attenuated. George Gwilt (of the Encyclopædia) wrote in 1842:—"It is in so many respects a mass of absurdity that it ought long since to have been repealed." It had, in fact, long become "a creed outworn."

THE Committee of Council on Education has issued a circular relating to the results of a special consideration of the subject of the examinations of the Science and Art Department, from which it appears that the number of candidates for examination in elementary science has increased and is increasing so enormously that "the machinery for examination and registration is already severely strained;" and, making a virtue of necessity, the Committee has come to the conclusion that after the May examinations of next year the payments of 1*l.* made for the second class in the elementary stage shall cease, but the payments for the advanced stage and honours will be considerably increased; and as a further move in the direction of reducing the crowd of inefficient candidates, the following proviso is added to clause 7 of the circular:—

"As it is of great importance to prevent large numbers of wholly unqualified candidates being presented at the examinations, the examiners will be instructed to note the papers of all such as would not obtain above 25 per cent. of marks, and a deduction will be made from the grant to each school for each such paper sufficient to cover the cost incidental to its examination."

IN Berlin there is always a number of large architectural schemes being worked out on paper. Of these schemes we have severally referred to those for a new cathedral, a national monument to the Emperor William I., and a set of new museums to be placed on the so-called "Museum Isle." The new cathedral is sure to be carried out sooner or later, although it is not known as yet who will have to pay for it. The national monument project, an architectural one at first, has been gradually transformed into a sculptural one, and will, when carried out, take that form. The museum project, at which several architects were working by order of the Emperor, has apparently dropped for the present. In its place a new scheme has, however, been put forward, interesting both the Government and the Emperor. It pertains to the erection of some buildings directly or indirectly connected with the Prussian Royal Academy, who are at present very badly off for accommodation for their offices, schools, and exhibition halls. To fulfil the numerous requirements, three separate buildings are planned, the first to be situated on the site of the old Academy building, Unter den Linden, containing the offices and a number of halls for limited first-class exhibitions or annual "salons;" the second, to be erected in an outlying suburb, for the schools only; and a third in the form of a large exhibition-building in place of the temporary iron one in which art exhibitions are now held.

THE so-called "international" gathering of architects and engineers, which is projected at Palermo in connexion with the National Italian Exhibition to be held there next year, is to have its official opening day on April 10. A series of business-like professional meetings, a systematic inspection of the exhibits at the national show, and a proposed mutual excursion of the visitors through Sicily, will together last till the end of the month. Professor Salemi Pace (Palermo) is the president of the managing committee of the gathering, and the Duca di Verdura is the honorary president. This committee is at present taking pains to obtain facilities for the journey of non-Italian visitors to Palermo, in the way of reductions in railway and steamboat travelling expenses. According to some arrangements already made, the tour on Italian ground from Ala (Verona, Bologna, Florence, Rome, Naples) to Palermo and back will cost about 7*l.* first class and 5*l.* second. Cards of legitimation necessary for obtaining reductions of this kind, and showing membership when at Palermo, can be obtained for 12 francs from the secretary of the managing committee. All letters pertaining to these cards or other information required should be addressed:—"Al signor ingegnere segretario del 'Congresso di Ingegneri' in Palermo, Porta Felice, Piazetta S. Spirito, 2."

AN American engineer, Mr. Hall, of California, has devised a new description of passenger-lift, or elevator, which should prove cheap and effective if the accounts given of it are to be taken as a criterion. By observation it was found that not more than one-sixth of the maximum load was lifted by elevators in daily working; and it was in order to obviate some of the waste due to this state of affairs that the apparatus in question was devised. In place of using a pump, steam is applied direct to the surface of a column of water. The device of making the pressure-water act as its own piston is by no means new,—and, indeed, has been applied, not without a certain promise of success, to marine propulsion. The chief difficulty has naturally been from condensation, and this, not, as might be supposed, from the surface contact of the steam and water, but through the water becoming disturbed and the consequent abstraction of heat by the walls of the containing cylinder. It takes a long time for water beneath a volume of steam to abstract heat from the latter, as every boiler-maker knows; for the process has to be carried on by conductivity, the far more powerful agent of convection not coming into play. When, however, the surface of the water is very much disturbed by the inrush of steam this rule does not apply. By Mr. Hall's arrangement the difficulty is overcome. The upper end or entrance of the cylinder is so arranged that the steam is admitted at a tangent, the angle of entrance being 15 deg., and the steam is not, therefore, brought violently down to the surface of the water. In this way, a receiver of moderate length, but of any required diameter, can be obtained. The distribution of steam and water is obtained by means of suitable valves. When the cage is required to descend, the steam is exhausted, and the water is allowed to flow back in the cylinder by the opening of a valve. When the cage is at rest, the steam is shut off, and the water is held in the cylinder by closing the water-valve. When the cage has to rise, steam from the boiler is admitted, and the pressure, acting on the column of water, supplies the required power. Trials with this apparatus in competition with an ordinary elevator were made at the California Electric Light Works with considerable success; it being stated that the new system showed an economy of 61 per cent. over the ordinary method of working with pumps. Outline particulars of the trials may be found in the "Proceedings" of the Institution of Civil Engineers, vol. cvi., Part IV. The system certainly appears to possess the merit of simplicity, but fuller particulars of the conditions of trial would be required before engineers would be prepared to accept the remarkably high efficiency claimed.

A LETTER appeared in the *Times* of the 12th inst. from Mr. G. W. Hemming, Q.C., complaining of the action, or, rather, of the inaction, of the London County Council in the matter of inspection of electric meters. This letter was just in time to be quoted and commented upon by the electrical papers for the week, the comments being, naturally, somewhat unfavourable to the Council. Further correspondence has, however, presented the matter in quite a different light. It seems that Mr. Hemming was mistaken in his facts,—which he admits,—and that the mistake arose from his misunderstanding a not very abstruse statement made to him by the manager of the House-to-House Electric Light Company,—which he does not admit. We hardly know which is the stranger circumstance, that a Q.C. and senior wrangler should so entirely have missed his brief, or that the *Times* should, for several days, head the correspondence "Gas-meters and the London County Council." We know the conservative instincts of Printing House-square; but, surely, even there it should be understood that electric energy is not measured by a gas-meter. Few will be inclined to grudge the Council the unaccustomed luxury of coming out best in a controversy; still, the fact remains that, through no fault of their own, they are unable to promptly carry out the task they have undertaken. Under these circum-

stances they might well act on the principle *qui facit per alium*, &c., and authorise some disinterested company or institution to perform the tests for them.

IN the *Morning Post* last week a number of correspondents have been writing on the electric light, mostly complaining of its injurious effect on the eyes, and exhibiting curious,—unhappily, not singular,—ignorance of their subject. The correspondence is opened by "A Sufferer," who, as is suggested by a later correspondent, confuses the arc and incandescent light, and quotes as a novelty an account of symptoms well known to most people who have any experience of arc regulating. He is followed by "A Student," who has returned to the midnight oil lest the *flickering* of his electric lamp should blind him. "A Student" must have been singularly unfortunate in his engine or belting; only irregular driving of the dynamo could make the light pulsate in the way he describes. The next letter, signed "Counsel," is a sensible protest against the way the lights are hung in the High Courts of Justice. An electric lamp, like any other, is to see by, not to look at. Finally, there is a letter in praise of the light as used in Canada,—"not too bright even to examine closely." It is to be feared that in that case lamps are run in Canada at wastefully low voltage. Few people care for long to "examine closely" even the unshaded flame of a paraffin lamp, and a glowing filament is more trying to look at. It is surprising that frosted glass is so little used for glow lamps; the loss of illuminating power is infinitesimal, not anything like the 30 or 40 per cent. usually stated, and the light is thereby rendered much safer and more pleasant to the eyes.

WE print on another page a letter from Messrs. Mowlem & Co. on the subject of the deceptive nature of crushing tests in regard to the fitness of road materials. We quite endorse the desire expressed by Mowlem & Co. that it is most advisable for surveyors and members of Local Boards not to base their selection of a road metal solely on the published statements of crushing-stresses; but, in endeavouring to prove this by the publication of some of Mr. Kirkaldy's tests for crushing-stresses, they seem to us to have endeavoured to prove a little too much. Because flints are brittle, and yet have a very high power of resisting a steady pressure, therefore stones with similarly greater powers of resistance to steady pressure than Guernsey granite (of which they are large shippers and owners) are necessarily or probably inferior to it for road-work. This is not admitted to be the case, for many of our toughest road-stones have a very high power of resistance to crushing, and the Cherbourg quartzite referred to by Messrs. Mowlem is certainly no exception to the rule.

THE *American Architect* chronicles "an extraordinary phenomenon in Boston," viz. "an exhibition of architectural drawings that some one goes to see." It is true the exhibition is free, which is a great point in its favour; still, we question whether in London even a free exhibition of architectural drawings would be much frequented! We extract the following passage from the article on the Boston exhibition:—

"For an architect in active business, Mr. Warren, as shown in his pen-and-ink perspectives, keeps his hand well in at sketching. Mr. Richardson and Mr. Walker, also in pen-and-ink, and Mr. Peabody and some others in colour, show no intention of letting their skill disappear for want of use; but many architects, including even Mr. Blackall, one of the most brilliant pen-and-ink sketchers in the country, seem to find it necessary to get expert assistance for their larger drawings. Although this is, perhaps, financially wise, the art of architectural drawing loses by the defection of so many of its once valiant champions, and exhibitions also lose very much by the appearance of sameness of style among the most important works. If Street, Nesfield, Norman Shaw, Ernest George, Jackson, and Waterhouse can afford time to make their own perspective drawings, our architects, apart from the unfortunate heads of what the Frenchmen call the American '*usines d'architecture*,' ought to be able to do so, and their artistic reputation would gain in consequence, however it might be with their pocket-books. The Boston public is probably not peculiar in taking nearly as much interest in the rendering as in the design of the various drawings. Two young girls, students from the Museum of Fine Arts, to judge from the business-like way with which they inspected the collection, were looking closely at a pen-and-ink perspective as we passed. 'I want to see how they get their effects,' we heard one of them say; and there is no doubt that variations in treatment, such as are at command, almost without limit, in pen-and-ink work, will be appreciated by many others besides architects."

WE have already illustrated one or two of the Chicago Exhibition buildings; some lithographs of others of them which have been forwarded to us exhibit a certain respectable level of architectural character, though without the originality which distinguished so many of the buildings of the 1889 Paris Exhibition. The Fine Arts Gallery, by Mr. C. B. Atwood, is a well-composed, long, low building of Classic character, with columnar orders and pedimented transepts, and a low segmental dome at the intersection: its situation near the lake must make it effective pictorially; details we cannot judge of on the small scale of the drawing, but the Classic details on the larger-scale drawing of the interior of the Administration building certainly do not seem very remarkable. The Fisheries Building, by Mr. H. I. Cobb, of Chicago, is picturesque in general outline; its success or otherwise will depend on detail; and Messrs. Jenney & Mundie's Horticultural Building, with its large central glass dome, is a good specimen of conservatory design on a great scale. Mr. S. S. Beman, in his design for the Mines Building, seems to have taken a suggestion from some of the Paris Exhibition buildings with success; this is more like a temporary exhibition building, a kind of booth architecture on a large scale, than some of the others, and in so far perhaps hits the mark better.

WE hope that the letter of the Rector of St. Mary Woolnoth, in the *Times* of Tuesday last, describing the insanitary state of the church from the collection of human remains beneath, will not be laid hold by the class of persons called "utilitarians" as an excuse for urging further that demolition of City churches which they seem to enjoy so much. As Mr. Brooke says, the argument plainly is for the clearing out of the remains in the basement, not for the extinction of the church, though it has to be now temporarily closed. If the church were removed the human remains on the site ought none the less to be removed from so central a position, and once they are removed the church would be safe for the future. The mere idea of removing St. Mary Woolnoth for such a reason is preposterous. The church can be made safe, in a sanitary point of view, by a clearance of the basement: and architecturally it is one of the best-planned and designed of all the old churches in London. The exterior is heavy, no doubt, though it has a great deal of originality and character in its façade; but the interior is a model of architectural design and plan for this class of church, and one which we can on no account afford to part with.

AS our readers know, we have never taken up or sympathised with the sentimental hue-and-cry often raised against railroad-making. But we do think that the proposal to make a railway along the strip of country called "the Undercliff," near Ventnor, deserves to be called a barbarism. This is not an extended landscape but a comparatively narrow strip of land protected by the cliff behind, and remarkable for its picturesque character and rural quiet. To bring a railway along it is simply to ruin it. This is an entirely exceptional case, and we trust the railway will not be allowed to be made.

IN connexion with the proceedings on the part of the New York *Churchman*, which we noticed last week, in the way of helping itself from our illustration pages, it is rather edifying to find in a subsequent issue of the same journal an editorial paragraph on the subject of "Common Honesty," in which we read that, in spite of the croaking of pessimists, "a knowledge of history shows that never before was there a higher standard of morality" than at present. So much the worse for *The Churchman*, in that case. There are some religious papers in England which are not very enlightened or very liberal in their views, but we are glad to think that we must cross the Atlantic to find a religious newspaper the editor of which will indite the praises of honesty with one hand while he is engaged in pillaging his neighbour with the other.

ON ROOD SCREENS.

PROBABLY there is no country where so many Rood screens are preserved and standing as in England. All our counties show some specimens, which is not surprising when we remember that every old church had originally a screen, or some sort of partition, between the nave and choir. Even Saxon churches were provided with some enclosure across the arch, which divided off the chancel.

Staveley, in his "History of Churches in England," about 1670, gives the following description of a Rood loft and screen:—

"The Holy Rood and the Rood Loft were also set up in churches. The Rood was an image of Christ upon the Cross, made generally of wood, and placed on a loft made for that purpose, just over the passage out of the church into the chancel. Out of this mystery they say that the church represents the Church militant, and the chancel the Church triumphant; and those which will pass out of the former into the latter must go under the Cross and suffer affliction. This Rood was not complete without the images of the Virgin Mary and Saint John, one of them standing on the one side and the other on the other side of the image of Christ; in allusion to that of St. John in the Gospel, Jesus (on the Cross) saw his mother, and the disciple standing by, whom he loved. These images were also sometimes placed without over the entrance into the church; but the places now wherever they stood before, are possess'd, and fill'd up generally with the King's Arms. These Holy Roods were of great esteem, and many miracles pretended to have been done at and by them. The Festival of the Exaltation of the Cross was, and till this time is, known by the name of Holy Rood Day; in the Saxon language the word Rode, or Rood, signifying a cross; and as it was an usual oath to swear by the Mass, so also by the Rood, as a very sacred thing."

As a rule, the screens were richly painted and carved, with open-work tracery above, and panels, with figures of saints painted on them, below; brackets were fixed on the upper part for the two figures (S. Mary and S. John), and sometimes also for others. The crucifix stood in the centre above. The Rood loft would be ascended to by a staircase, on the north side generally; sometimes the staircase would be on the south, but more rarely; and occasionally on both,—either in circular turrets, or carried up in the thickness of the wall. Lecterns for the epistle, gospel, and lessons, and standards for lights were ranged along the Loft: if there was an Altar it was placed beneath the Cross. Authorities seem divided as to how much the lofts were in general use, whether lessons, &c., were ordinarily read from them, or if by very infrequent use extra solemnity was lent to the occasions when special exhortations or sentences of excommunication, or discipline would be spoken therefrom.

In the reign of Edward VI. the roods, with their attendant images, were removed; the screens do not appear to have suffered, and in the majority of cases where they have disappeared, or been much mutilated, it is probably owing to the carelessness, or ignorance, of later times, often of this century.

The counties richest in screens are Norfolk, Suffolk, Lincolnshire, Cambridgeshire, and Devonshire.

There are very numerous entries in old wills and old churchwardens' accounts of monies left for, and spent on, the erection or repairing of screens. For instance, from St. Margaret's, Westminster:—

"1510. Item, the sd. wardens, now accomptants, received of Mrs. Elizabeth Morley, widow, towards the new making of a Rood, Mary and John,

Rood loft, at the time the parish be of power and substance to build and make the same rood loft, the sum of 10*l.*

Item, received of the gift of Watir Gardyner to the making of the rode loft in the middle isle within the church, as more plainly appeareth by acquittance, made by the sd. churchwardens to the said N. Watir. dated the day of October, the 9th year of King Henry VII., 30*l.*"

The next two entries are curious, and show that the commandments were originally set up on the Rood lofts, and not over the Altar.—*Temp.* Edward VI.

"Paid to Thomas Stockdale for xxxv. ells of cloth for the fronte of the rood lofte, whereon the commandments be written."

1557. "For making iii. serplys of the cloth that hung before the rode-loft, written with the commandments, 2s."

In 1559, Elizabeth's reign, the rood was destroyed.

"Paid to John Rial for his 3 day's work to take down the roode, Mary and John, 2s. 8d.

Item, to the same for cleaving and sawing of the rood, Mary and John, 1s.

1561. Paid to joyners and labourers about the taking down, and new reforming of the rood loft, as by a particular book thereof made doth appear, 37*l.* 10s. 2d."

The Churchwardens' accounts, about the same time as the above, of St. Helen's, Abingdon, note these items:—

1555. "Payde for making the roode, and peynting the same, 0*l.* 5s. 4d.

For making the roode lyghtes, 0*l.* 10s. 6d.

For the roode lyghtes at Christmase, 1*l.* 3s. 2½d.

1557. Received of the paryshe for the roode lyghts at Christmas. Payde for peynting the roode of Marie, and John, and the patron of the churche, 0*l.* 6s. 8d.

For the roode, Marie, and John, with the patron of the church, 0*l.* 18s.

1561. To the Somner, for bringing the order of the roode loft, and to the carpenter, and others for taking downe the roode lofte, and stopping the holes in the wall where the joices stoode, 15s. 8d.

To the peynter, for writing the Scripture where the roode loft stoode, and overthwarte the same isle, 3s. 4d."

At Fritton, in Norfolk, Stephen Brown, in 1528, gave "to the gyldynge of the perke in the Church of Ffreton vj^{s}. viij^{d}." Perke is strictly the beam for candles; but here, doubtless, is meant the whole screen.

Earlier still, in the Bodmin Church accounts, XVIth Henry VII. is mentioned,—

"Paynting of oon hystory in the roode lofte, thirty three shillings and fourpence. Item. I paide Cristofer, paynter, in full payment for the paynting of iiij hystories in the roode lofte, xvj."

In the accounts belonging to the Church of S. Peter and S. Paul, Brockdish, Norfolk, is the item, dated 1561, "For cutting down the screen, 14d."

Fritton, that we mentioned just now, has two panels with secular subjects, which is very unusual, as the screens are generally only painted with figures of saints or apostles; these panels are supposed to be portraits of John Bacun, the donor of the screen, and his wife, with their fourteen children. She and her three daughters, he and his eleven sons, all kneeling. The inscription is partly illegible, "Orate p . aiab- Johi Bac . . . W . . ris." *Temp.* 1510-20.

Pugin says of the Norfolk screens that there were evidently five different artists, as the styles are so varied to a close observer. We learn from old records that there were numerous painters in Norwich, *e.g.*, 48th Edward III., 1375, two painters were admitted to the freedom of the city of Norwich; another in 2nd Richard II., 1379, and three in the 10th and 11th Richard II. After 1399, till 1455, there is a regular succession of painters and stainers. Barton Turf screen, which has the most elaborate paintings of any in Norfolk, is supposed to have been the work of a Flemish painter, from the likeness in style to the early masters at Antwerp and elsewhere in Belgium.

The date of the erection of a screen was often a good deal earlier than that of its paintings. And sometimes the paintings are still later, being painted over the originals. At Lessingham Church, for instance, in Norfolk, where the lower part of the screen is still standing, three paintings of Fathers of the Church have been substituted for three of the Apostles: this work was probably begun just before the Reformation, or in Queen Mary's time, and then left incomplete. At Sparham, also in Norfolk, there are a few remains of a screen, showing that the original paintings were painted over with a sort of "Dance-of-death" of skeletons in gay clothing.

In an old manuscript, written by Robert Martin, of Melford-place, just before the Reformation, the Rood screen in Holy Trinity Church, Melford, is thus described:—"There was a fair Rood Loft, with the Rood, Mary and John of every side, and with a fair pair of organs standing thereby; which Loft extended all the breadth of the Church, and on Good Friday a Priest then standing by the Rood sang the Passion. The side thereof, toward the body of the Church in twelve partitions in boards was fair painted with the images of the 12 Apostles."

The lights for the Rood Loft, and their latten, or brass, bowls, or stands, are often mentioned in old records. In the churchwarden's accounts, S. Lawrence, Reading, we find:—

"1499. Item. rec. at Alhalow-tyde for the rode light, x^{s}. iiij^{d}.

Item. Payed for xliij. li. of ire wark, on the south end of the rode loft to stay the lyght, the l. ii^{d}. Sm^{a} viis. iid.

Item. Payed for scouring of the laten bolls in the said loft, iiiid."

In the churchwardens' account, Heybridge, Essex, is noted, "Payde for waxe for the roode lofte lighte agenst Chrystemas last paste, pryce the povnde, 10d., £0. 4s. 2d." The rood lights were often kept burning at the expense of individual members of the congregation, and sometimes by a guild or company. At Stowmarket there was a Bachelor's light, supported by the unmarried men, and at Knapton a Maiden's light, kept up by the maidens. Before the Reformation, every church had at least two lights, "our Ladye's light," and the "light of our Ladye of Pity." At Marsham All Hallows, according to Blomefield, there were nineteen lights, including those of the Brown Rood, High Rood, and our Lady of Pity; some of the others, of course, were not Rood Lights, but kept burning before special images. There are few screens now remaining of an older date than the thirteenth century, as so many of our churches have been rebuilt and refitted since that period. Rood Lofts do not seem to have been much in use in this country before the fourteenth century, and not general until the fifteenth. When the Church is an earlier date than this, we frequently find that a portion of the north or south wall has been taken down and rebuilt, in order to introduce the staircase, and as this could seldom be done without disturbing a window, the adjoining window is of this date. In Iffley Church, Oxon, the position of the window has been removed some feet to allow room for the staircase; the situation of the old Norman window may still be distinctly traced.

We will conclude with quoting an old English verse, often inscribed on rood screens in former times:—

"Let fall down thy ne, and lift up thy hart,
Behold thy maker on yond cros al to torn;
Remember his wondis that for the did smart,
Gotyn without syn, and on a virgin born."

C. F. Y.

DR. DÖRPFELD'S VIEWS ON THE GREEK THEATRE.*

On November 11 Miss Eugénie Sellers, late student of the British School of Archæology at Athens, gave a lecture at South Kensington on the Dörpfeldian view of the Greek theatre. The subject was sub-divided according to the three periods into which Dr. Dörpfeld divides the history of the theatre buildings.† 1. The early theatre consisted of the round orchestra, such as we knew it in the beautiful theatre of Epidauros, with the altar (*thymele*) in the centre, raised on steps which formed the platform from which the first actor spoke. Aeschylos, tradition tells us, invented the *skene*,—*i.e.*, he brought the actor's tent (*skene*), or green-room, close to the circle of the orchestra, to form a background for the action. The spectators' seats (*theatron*) were disposed in semi-circular tiers. The *skene* often had projecting square towers at each side, the *paraskènia*, to which painted scenery could be fixed, if necessary. This is the *skenographia* ascribed to Sophokles. The oldest foundations of the Dionysiac theatre at Athens, whether they actually belong to the fifth century, or are merely a translation into stone of the fifth-century wooden theatre, admirably illustrate this arrangement. The lecturer dwelt on the evident æsthetic gain which recent excavations have brought to our realisation of a fifth-century play, by showing that, in the absence of any sort of stage, chorus and actors must have acted on the same level, without artificial separation. Kassandra ranges free over the orchestra in her frenzy of despair; she springs back again and again from the palace doors she essays to enter, as the visions of past and future guilt burst upon her, while the chorus crowds round in fear. Elektra, in the Choëphoroi, performs the ritual of the dead, surrounded by her maidens, who chaunt as they move slowly round her. Prometheus, with the Oceanides grouped about him, disappears amid the storm. These disappearances could be effected by means of those trap-doors which the recent excavations in the theatres of Magnesia and Eutica have revealed in the floor of the orchestra.

2. In the Middle and New comedy, a mere comedy of manners, the chorus disappeared. For this street and market drama no elaborate *skene*, adapted further to movable scenery, was necessary, the colonnade of a simple dwelling-house was sufficient. Hence, all over Greece, in every theatre, the plan of which can be recovered, a columned *proskènion*,—*i.e.*, fixed scenery of stone,—was put up. At Oropos this columned proskènia is of special interest, for the inscription that runs along its architrave . . . . ἀ]γωνοθετή | σας τ[ὸ]προ | σκήνιον κα | ὶ τους πίν[ακας . . (*i.e.*, dedicated). In these *pinakes*, or painted panels, that were fitted into grooves cut into the columns, we evidently have the survival of the elaborate skenographia of Sophokles.

3. Even before the Conquest of Greece by the Romans, the luxurious Greek cities of Asia Minor had adopted the fashion for gladiatorial shows. That a theatre might serve the double purpose of arena and of theatre the larger portion of the orchestra was sunk for the arena, while the segment round the *skene* was left standing for the actors, thus forming a *raised* platform or stage. A division between chorus and actors when any of the great plays were put on now became necessary. Asia Minor affords countless instances of these theatres. One more innovation only was needed,—to bring down the seats to the new level of the orchestra in theatres that were not used for gladiatorial purposes, and the evolution was now complete; orchestra and stage became two separate elements, while the skene and proskènion remained a fixed quantity, in *front* of which the actors have acted from the days of Æschylos down to ours. In Greece this Roman theatre does not seem to have been adopted. Only at Athens, in Imperial days, its shape was imitated by erecting the familiar ring of slabs at the foot of the *theatron*, by *building* a stage. In the last pictures that Greek writers have left us of the Dionysiac theatre we see it polluted by the blood of gladiators "butchered," to quote Dr. Chrysostom, "to make not a Roman but an Athenian holiday."

The subject was copiously illustrated by drawings and photographs shown by means of the lime-light. There were present at the lecture, which was numerously attended, Sir Charles Newton, Mr. F. C. Penrose, late director of the British School at Athens, Mr. A. S. Murray, Mr. L. Dyer, Mr. G. Macmillan, Mr. J. W. Mackail, Mr. W. H. Mallock, &c.

* See "Note" on p. 398.

† See Kawerau in Baumeister's "Denkmäler d. Klass. Alterthums," p. 1730 foll., and Dr. Dörpfeld in Berl. Philolog. Wochenschrift, April 15, 1890.

THE ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD.

The "Twentieth Annual Report of the Local Government Board, 1890-91," just published,* is of more than usual interest, as it contains some account of the second year's work done under the Local Government Act, 1888,—that is to say, of the second year of the new county administration.

The Report consists of nearly 200 pages, and is divided into four sections, dealing respectively with (1) the Local Government Act, 1888, and the County Councils; (2) the Relief of the Poor and the Poor-rate; (3) the Public Health and Local Administration; and (4) Local Taxation and Valuation. The report is supplemented by upwards of 700 pages of appendices, elucidating and explaining various subjects in detail; so that, altogether, it forms a volume of 900 pages, containing a great deal of suggestive matter for the administrator, the

* London: Printed for Her Majesty's Stationery Office, and sold, by Messrs. Eyre & Spottiswoode.

statistician, the sanitarian, and the economist' But the usefulness of the publication would be greatly enhanced by the addition of a general index. The table of "Contents" prefixed to the Report is not very helpful, as it is divided into sections and is not alphabetically arranged.

With regard to the first section of the Report, —that, namely, referring to the operation of the Local Government Act, 1888, and to the establishment and working of County Councils, —a great deal of information is given as to difficulties met with and surmounted, or partially so, and particulars are given of new duties imposed upon County Councils since their constitution. For example, "some new and important duties" have been conferred on County Councils by the Housing of the Working Classes Act, 1890. "County Councils are now invested with the power of taking proceedings, on the default of a Rural Sanitary Authority, for the closing and demolition of insanitary dwellings and the removal of obstructive buildings."

The second portion of the Report, "Relief of the Poor and the Poor-Rate," contains detailed particulars as to the administration of the Poor-laws. It appears that on January 1, 1891, the total number of paupers of all classes in England and Wales in receipt of relief was 780,457, of whom 198,044 were in-door, and 582,239 out-door, paupers. Only 174 received both in-door and out-door relief. As compared with the numbers on January 1, 1890, these figures show a decrease of 2,219 in the in-door, 10,525 in the out-door paupers, and of 45 in the number of those receiving both in-door and out-door relief. The decrease on the total number of paupers was 12,789, or 1·6 per cent. This decrease is regarded by Mr. Ritchie, the President of the Board, who signs the report, as "very satisfactory, especially having regard to the fact that, prior to the close of the year 1890, there had been a long period of very severe frost, which interfered greatly with the out-door employment of the working classes." Taking the estimates of the Registrar-General of the population of England and Wales, in the middle of each of the years 1889 and 1890, as the basis of calculation for the purpose of ascertaining the proportion to the population of the paupers relieved on January 1 of the two years 1890 and 1891 respectively, it appears that the total number of paupers amounted approximately in the former year to 1 in every 37 persons, and in the latter year to 1 in every 38 persons. The cost of the relief of the poor during the year ended March 25, 1890 (the latest date for which the returns of expenditure can be given) was 8,434,345*l.* That amount represents an average charge of 5s. 9¾d. per head on the estimated population for that year (being ¾d. per head less than in the preceding year), and an average rate of 1s. 1·5d. in the pound on the rateable value of the property liable to contribute to the Poor-rate. "In forty out of the forty-seven preceding years, the average charge per head of the expenditure on the estimated population has been higher than in 1889-90, and in only two of the years for which we have statistics of pauperism has the average rate in the pound on the rateable value been lower." Referring to the disastrous fire at the Forest Gate Schools on January 1, 1890,* when twenty-six lads lost their lives, and to the fatal fire at the Newcastle-under-Lyme Union workhouse, in which six lives were lost, the Report mentions that during the year the Board addressed a circular to its Poor-law inspectors on the subject of the safety of the inmates of such institutions in case of fire; it also expresses satisfaction that numerous plans for works having that object in view had been submitted to and approved by the Board.

It is, however, with the third section of the Report, dealing with "The Public Health and Local Administration," that we and our readers are more especially concerned. At the outset of this section of the Report some figures are given showing the enormous amounts of money which have been expended on sanitary works in England and Wales during the last fifty years. It appears that the total amount of the loans which were sanctioned by the old General Board of Health under the Public Health Act, 1848, up to September 1, 1858 (when the Local Government Act, 1858, came into force), was 2,956,178*l.* The sanctions granted by the Secretary of State under the latter Act and the Sewage Utilisation Act, 1865, prior to August 19, 1871, amounted to 7,363,366*l.* Since its constitution on August 19, 1871, the present Local Government Board has sanctioned the borrowing by Urban and Rural Sanitary Authorities of 46,762,553*l.* By far the greater proportion of the last-named amount has been sanctioned for the purpose of sanitary improvements in Urban districts, to be executed under the provisions of the Sanitary Acts, the Public Health Act, 1875, and local Acts and Provisional Orders. The expenditure sanctioned by the Board under the Artisans and Labourers' Dwellings Act, 1875, amounts to 2,347,353*l.* During the year covered by the Report, the Board, under section 243 of the Public Health Act, 1875, recommended the Public Works Loan Commissioners to make advances amounting to 291,851*l.*, at reduced rates of interest, to Urban and Rural Sanitary Authorities. It is stated that the works in respect of which the Commissioners are willing, upon the recommendation of the Board, to advance money at a low rate of interest under the before-mentioned section of the Act, are works of primary sanitary importance, such as water supply, sewerage and sewage disposal, baths, and hospitals.

We must pass over much that is of interest in the Report concerning such subjects as the Public Health Acts Amendment Act, 1890 (which enabled Sanitary Authorities outside the County of London "to obtain additional powers of much importance in relation to sanitary administration"); the Infectious Diseases (Prevention) Act, 1890; the Open Spaces Act, 1890; By-laws under the Public Health Acts; the regulation of dairies, cowsheds, and milk-shops; the administration of the Canal Boat Acts; the analysis of food, beverages, and drugs; and other topics of interest. With regard to the operation of the Alkali, &c., Works Regulation Act, 1881, Mr. Ritchie, founding his remarks on the report of Mr. A. E. Fletcher, the chief inspector under the Act, remarks that the Board has "good reason to be confident that the system of inspection is attended by excellent results, that the aggregate amount of noxious vapour discharged is being steadily diminished, and that both workers in the factories and residents in the neighbourhoods have materially benefitted." While there is no doubt ample justification for this statement, there still remains much to be done to clear the atmosphere of some of our manufacturing towns.

One of the most important matters dealt with in this section of the Report is that of the London water supply. The reports of the Examiner under the Metropolis Water Act (Major-General A. de Courcy Scott, R.E.), and of the Analyst (Professor Frankland, F.R.S.) on the water supplied by the eight metropolitan companies in 1890 are given in an appendix. As to the quality of the water, Professor Frankland reports that he has, as usual, analysed one sample monthly from a main of each company, and that the proportion of organic matter in the river waters was considerably less than in any year (except 1889, when it was about the same) since the system of analyses was begun in 1868. "The amount of organic impurity in the Thames water delivered in 1868 being taken as the standard, represented by the figures 1,000, the maximum was attained in the year 1880, both in the case of the Thames and of the Lea, with figures of 1,254 and 1,213 respectively. In 1890, the corresponding figures had sunk to 680 and 413, the water derived from the Lea still containing considerably less organic matter than that from the Thames." The Kent Company, the Report goes on to say, is alone in drawing its supply exclusively from deep wells in the chalk formation, and this water, we are told, is delivered unfiltered. As regards purity, this supply is stated to be very satisfactory, its only known drawback being its excessive hardness. "The salts of lime and magnesia which it contains not only make it ill-suited for use in laundries,—and, indeed, wherever much soap is employed,—but cause incrustations and deposits in steam and kitchen boilers and hot-water pipes. It is believed, however, that they in no wise diminish its fitness for drinking." We have our doubts on this last-named point, and so, we think, have most medical men. No doubt one advantage of this water is its comparative uniformity of temperature. Thus we read that "while the temperature of the water derived from the Thames and Lea, as delivered by the seven other companies, fluctuated from 65·3 deg. Fahr. in August to 37 deg. in December, the deep-well water of the Kent Company varied only from 56·1 deg. in August to 50·9 deg. in December." Professor Frankland remarks that this characteristic of the well-water is of considerable importance, since it remains cool and refreshing in summer, and is less likely to become frozen in the service-pipes in the winter; while river water at 66 deg. is unpleasantly vapid, and at 37 deg. is rapidly cooled to the freezing-point.

It appears that the whole population supplied by the eight companies is estimated at 5,661,640. Of this number, about three-fourths are resident within the area of about 120 square miles comprised within the limits of the Metropolis, and about one-fourth, spread over about 400 square miles, are outside. Not far from half of the entire number of consumers are served by the New River and East London Companies, both of which derive their chief supply from the Lea, which, however, is supplemented from de wells, while the East London Company is also authorised to draw 10,000,000 gallons daily from the Thames at Sunbury. Of the other companies, five (viz., the Chelsea, the Grand Junction, the Lambeth, the Southwark and Vauxhall, and the West Middlesex) take their water either directly from the Thames, or from gravel beds in the river valley.

In view of the steps now being taken by the London County Council and the Corporation of London with regard to the water-supply of London, it is worth note that General Scott states that the portion of the Thames river basin which is above the intakes of the water companies extends over about 3,465 square miles: that over two-thirds of this area the surface is formed of permeable and water-bearing strata through which the rainfall penetrates and replenishes the springs from which the dry-weather flow of the stream is derived. The chalk and oolite formations, it is urged, thus practically form "enormous and never-failing reservoirs," the result being that "in respect of constancy of flow throughout the year the Thames is superior to all other lakeless rivers in this country." The mean daily flow at Kingston is about 1,100,000,000 gallons, and as the water companies are debarred from abstracting, in any one day, more than 130,000,000 gallons, and only on rare occasions approach this maximum, the withdrawal of the amount which they take has, according to the Report, "no very considerable effect on the condition of the river below the intakes as regards its average flow and flood discharge, and the characteristics of the channel maintained by the passage of the water."

But, assuming that the water of the Upper Thames is sufficient in quantity to meet the wants of London for some time to come, a question of even greater importance is that of its quality, especially during the hot weather. For, in the words of the Report, "it must be remembered that it is in times of drought, when the river is at its lowest, that the consumption of water is at its highest, and the proportion abstracted at such periods is often very large. On the 15th of September, 1890, for example, the flow only amounted to 311,000,000 gallons, of which 96,000,000 were withdrawn by the water companies, and during the whole of that month the average proportion drawn off was nearly one quarter of the whole, while during August, 1885, the corresponding proportion was nearly one-third." These figures are amply sufficient to prove that the governing authorities of London are not stirring themselves a moment too soon in regard to the water question. The same conclusion is even more strikingly supported by the figures with regard to the River Lea. The average daily discharge of that river throughout the year is stated to be about 109,000,000 gallons, while the average daily supply of the East London and New River companies is 75,000,000 gallons. "But in the summer months of dry years the flow of the river falls as low as 45½ million gallons, while the supply rises to 86,000,000 gallons, and the balance of 40½ million gallons has to be drawn partly (not more than 10,000,000 gallons) from the Thames, partly from wells, and partly from reservoirs, with which the East London Company are largely provided. It would seem, however, that the balance between the available supply and the demand is becoming so small that it may soon have to be a question how the existing supply can best be supplemented so as to cope with the wants of the rapidly-growing population of North London." General Scott's report, which

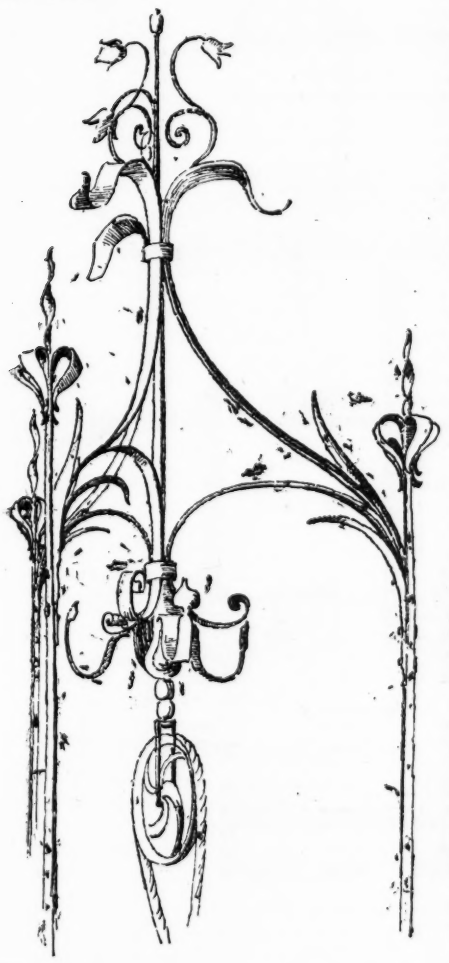
* See *Builder* for Jan. 25, 1890, p. 55.

appears as an appendix, gives a great many interesting details on the subject.

With regard to the fourth and concluding section of the Report, "Local Taxation and Valuation," it appears that during the year 1888-9 the total amount received from public rates by local authorities in England and Wales was 27,420,223*l.*, of which, in round numbers, 8½ millions were received by Poor-law Authorities, 4½ millions by Town Councils acting as Urban Sanitary Authorities, 2½ millions by Rural Sanitary Authorities, 2½ millions by School Boards, 1½ millions by Metropolitan Vestries and District Boards, 2 millions by County Authorities, and 1½ millions by Highway Authorities in rural districts. At the end of the financial year 1888-9 the total amount of outstanding loans to local authorities was 195,442,397*l.*,—a very respectable sum. We wish we could think that it has all been wisely spent.

WROUGHT-IRON WELL-HEAD, CLUNY MUSEUM.

THE sketch of this interesting and graceful bit of wrought-iron work is by Mr. W. G. Townsend.



Wrought-iron Work from a Well in the Courtyard of the Cluny Museum, Paris.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION (LONDON).—The opening meeting of the Discussion Section (late Advanced Class of Construction and Practice) for the Session 1891-92 was held at the rooms of the Association on Wednesday, November 18, when Mr. A. W. Saxon Snell, F.R.I.B.A., read a paper on "The Planning of Public Buildings,—a Plea for Symmetry." Mr. Aston Webb, F.R.I.B.A., kindly attended as the special visitor for the evening, and the excellent manner in which he reviewed the subject, and the advice that he gave, were much appreciated by the members.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At a meeting of the Edinburgh Architectural Association, held on the 19th inst., the newly-appointed honorary librarian disclosed the unwelcome fact that a number of valuable books had been removed from the library. In consequence of this disclosure, and as no information was left by which the books could be traced, it was reluctantly resolved to close the library in the meantime, in the hope that this decided step might lead to the restoration of some of the missing volumes. The committee are of opinion that most of the lost books are kept back through carelessness or forgetfulness, as it is hardly possible to imagine what use any one could make, say, of such a work as "Sharpe's Parallels," plastered over, as it is, with the stamp of the Association. At the same time, they are forced to acknowledge that this safeguard is not always sufficient, as a short time ago two volumes so stamped were found in an auction-room among the books of a deceased member, and were only withdrawn from sale and restored on being claimed by the Secretary of the Association. The librarian was directed to request the assistance of the professional journals in giving publicity to these facts.

GLASGOW ARCHITECTURAL ASSOCIATION.—The third lecture of the session was given on the 17th inst. by Mr. Archibald Macpherson, vice-President of the Edinburgh Architectural Association, his subject being "The Scottish Mansions." The President, Mr. William J. Anderson, occupied the chair. The paper was an historical sketch of the development of the dwelling-house from the keep or fortress. According to the lecturer, the period from which this movement dates, as observable in the specimens extant, cannot be put much earlier than the beginning of the fifteenth century. Timber structures were more common than is sometimes supposed, but these we know of only by meagre description. A number of illustrations of typical examples were shown. The customary vote of thanks was awarded Mr. Macpherson at the close of the lecture.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—The sixteenth session of this Society was opened on Monday evening last, when the President, Mr. W. H. Thorp, F.R.I.B.A., delivered an address. He pointed out that the Society had completed the first year of its alliance with the Royal Institute of British Architects, and had thereby been materially strengthened. After speaking of architectural education, he said that a year ago, on the occasion of his last presidential address, he took the opportunity of making a few remarks as to his views upon the published design for the Leeds new Post-office, and in doing so was not able to speak altogether in its favour. It was not his wish in any way to reflect upon the ability of the architect to the Department, who was probably hampered by considerations of expense in his architectural treatment of the building, and thereby had been unable to do justice to the fine opportunity placed within his reach; on the other hand, knowing the inhabitants of the town, after exercising their patience for many years, were expecting a beautiful edifice to take the place of the Old Cloth Hall,—a building of no architectural style, and renowned for its ugliness,—he felt justified in questioning whether the design, if carried out, as an example of architecture, would take its due place amongst the finest buildings of the town, and be worthy of the splendid site upon which it was to be erected. The sentiments then expressed appeared to be in accordance with the general feeling in the town. The question was taken up by the Borough Council and the Leeds Chamber of Commerce, and their desires, together with those of the Society, for a reconsideration of the design, were forwarded to the Department in London. He alluded to the deputation which waited upon the late Postmaster-General with reference to the subject, and to the revised design which was afterwards forwarded to the Leeds Corporation for approval, remarking that upon inspecting the drawings they found that although a good deal of similarity existed between the old and the revised proposals, a material improvement had been effected, and a more dignified and monumental character imparted to the building. One or two of its features still gave rise to comments, not entirely of a favourable nature. These were noted, and suggestions were made for their improvement. Reviewing the circumstances of the case, he thought they had reason to be satisfied with the action taken by that Society, and the other bodies with whom it had been associated, in the movement; and, should the new Post-office not quite come up to the ideal of their expectations, they would feel it had not been from any lack of effort on their part to improve the architecture of the town. The President concluded by referring to various projected or desirable local improvements.—On the motion of Mr. G. B. Bulmer, seconded by Mr. E. J. Dodgshun, a vote of thanks was accorded to Mr. Thorp for his address.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday afternoon last at Spring-gardens, the Chairman, Sir John Lubbock, presiding.

Death of the Deputy-Chairman.—Sir John Lubbock, on taking the chair, said he had a very sad announcement to make,—that of the death of Mr. Haggis, the Deputy-Chairman, who died suddenly that morning while on his way to the offices of the Council. Mr. Haggis since his appointment had devoted himself heart and soul to the arduous and anxious duties of his office. He was a strong man in every sense of the word, but it was to be feared that he overtaxed his strength. They all knew how carefully, how conscientiously, how ably he fulfilled his important duties. They all knew how impartial he was, how loyal to the Council, how devoted to London. During their meetings his place was never empty. He was sure that they would wish to join in an expression of their sense of the great loss which they had sustained, and of their sympathy with his family. In conclusion, the Chairman suggested that they should take the pressing business, so far as there was not any substantial opposition, and then adjourn out of respect to the memory of the Deputy-Chairman.

This was agreed to, and on the motion of Mr. Osborn, seconded by Mr. Fardell, a vote of condolence with the family of the deceased was passed.

Proposed New Asylum.—The Asylums Committee, who had been authorised a year ago to take such steps as they thought best for providing further asylum accommodation, reported that they did not think the Council would be anticipating future need too much if an asylum was built for 1,000 persons. To obtain a site and erect buildings might be estimated to take about three or four years, and putting the increase of lunacy at an average of 300 per annum, the asylum would be filled with patients immediately it was completed. They therefore recommended that they be authorised to expend a sum not exceeding 100*l.* for advertising and obtaining such professional assistance as might be required to enable them to select a suitable site for the erection of asylum buildings to accommodate 1,000 patients; and further to ascertain the terms upon which such site might be purchased.

The recommendation was adopted.

New Chairman of the Building Act Committee.—This Committee reported that they had elected Dr. G. B. Longstaff to be their Chairman for the remainder of the Committee's term of office, and that they had passed a vote of thanks to Mr. John Hutton, the retiring chairman of the Committee, for his past services.

District Surveyorships.—The same Committee also reported that they had proceeded upon the order of reference from the Council, authorising them to take the necessary measures for filling the vacancy in the office of District Surveyor, and in each case to recommend to the Council the person whom they considered most suitable for the appointment, and also any alteration which they might think should be made to the limits of any District. They recommended:—

"That the District of South St. Marylebone, rendered vacant by the decease of Mr. Tarver, be added to the District of North St. Marylebone, for which Mr. Arthur Ashbridge is District Surveyor; that, upon Mr. Arthur Ashbridge formally resigning his present appointment and signing the declaration approved by the Council, he be appointed District Surveyor for the existing Districts of North and South St. Marylebone, and that such united Districts be designated the District of St. Marylebone."

This was agreed to.

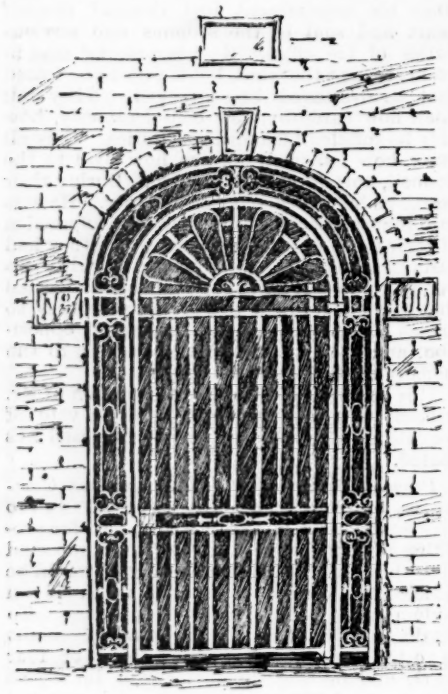
The Water Question.—The Parliamentary Committee reported that in order to give effect to the resolutions passed by the Council on this subject, they had settled the terms of the notice for the Bill to be promoted jointly by the Council and the Corporation, and had inserted the necessary paragraphs in the notice for the General Powers Bill for (*a*) enlarging the powers of the Council to expend money in making the inquiry already authorised, and (*b*) enabling the Council to pay the expenses attendant on the introduction and promotion of Bills on the

water question. They had also included notice of the Council's intention to seek power to enable the Council to promote Bills in Parliament relating to the water supply, and to pay the costs and expenses incidental thereto. They recommended that the course taken be approved by them, and this was agreed to.

After transacting other business, the Council adjourned at four o'clock—three hours earlier than usual.

WROUGHT-IRON GATE, CHELSEA.

THIS gate, though it certainly does not present anything very recondite in design, is a sufficiently characteristic example of the "Old Chelsea" period to be worth recording. It is



Wrought-iron Gate, Old Chelsea.

situated between the new Battersea Bridge and the Old Coal Wharf, on the Embankment, and is the outer gate to the covered-way to a house. The sketch is by Mr. W. G. Townsend.

Illustrations.

DESIGN FOR WALL DECORATION.

THIS design, the drawing for which was exhibited in the Architectural Room at the Royal Academy this year, was commissioned from Mr. Sydney Vacher by Messrs. Rottmann, of London, but is, Mr. Vacher tells us, getting made for them in Japan. It will be treated in a bold manner on a large scale, and with a good deal of relief.

ST. BARNABAS COTTAGE HOSPITAL, SALTASH, CORNWALL.

THE want of a cottage hospital had long been felt in the populous neighbourhood of Saltash, until the present one was built by Mrs. Ley, in memory of her husband, the Rev. Richard Ley, from the designs and under the immediate superintendence of Mr. George H. Fellowes Prynne, of London, the builder being Mr. R. M. Rowse, of Plymouth.

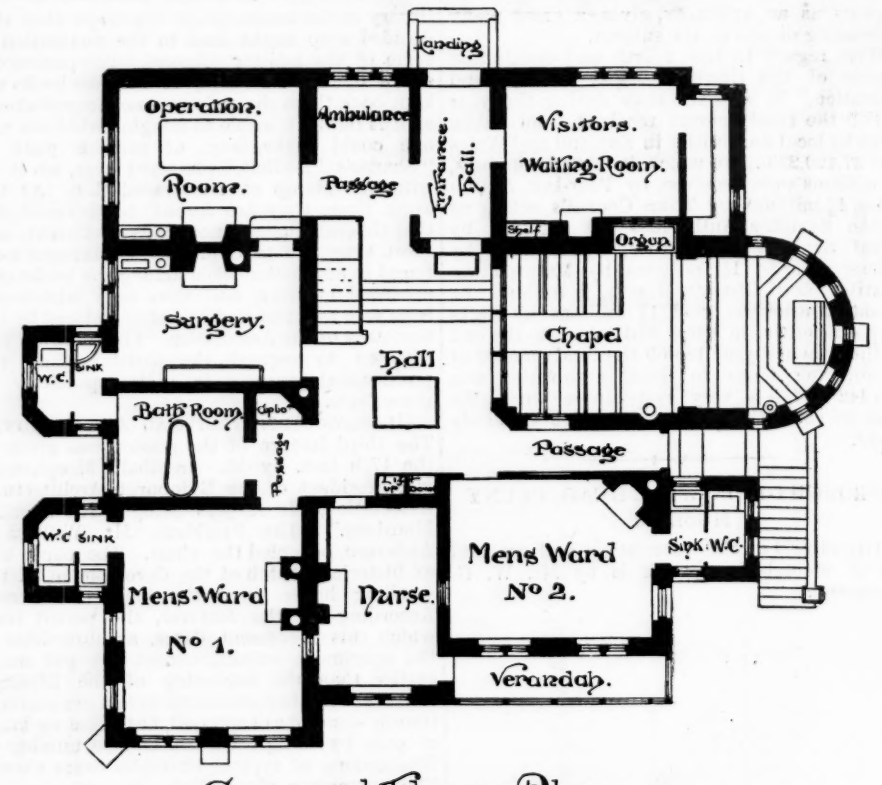
The management of the hospital has been placed under the entire charge of nursing sisters of St. Mary's, Wantage.

The accommodation is as follows:—

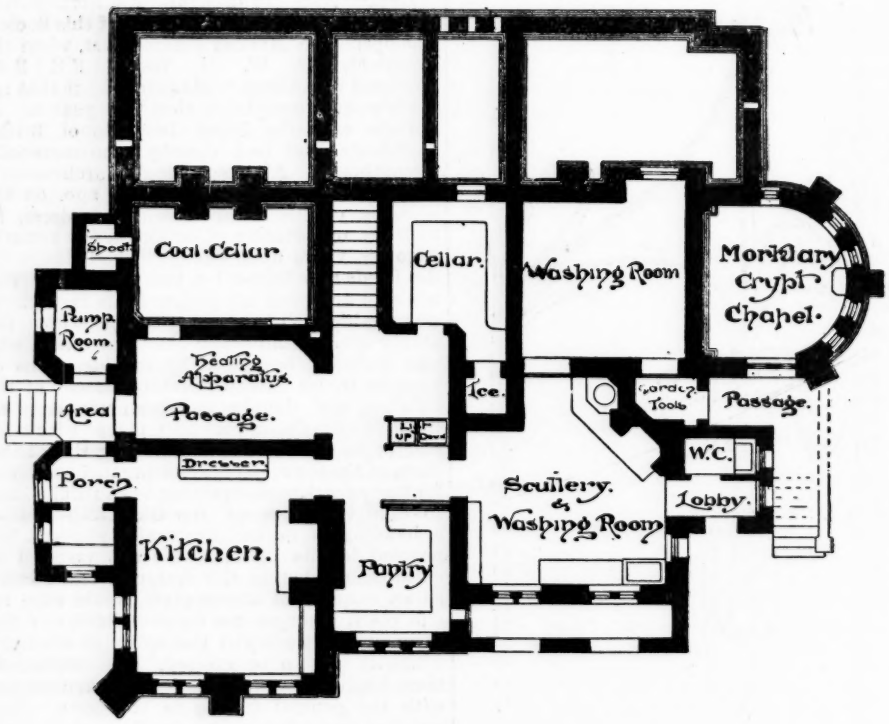
Ordinary.		Maximum.	
Male Ward	6	Male Ward	8
Female Ward	5	Female Ward	7
Children's Ward	3	Children's Ward	4
Nursing Sisters	2	Nursing Sisters	3
Servants	2	Servants	3

The general scheme of plan is as follows:—

Basement.—The basement consists of a good-sized kitchen, with small room adjoining for sink, &c., and is fitted with every requisite; a scullery, fitted with copper, small range, cupboard, and sink; a pantry, fitted with shelves, &c.; two cellars, one for house use, and the second for coals; an ice-pit, pump-room, heating-chamber, and necessary servants' offices. A mortuary chapel is formed immediately under the east end of the ground-floor chapel. This mortuary chapel is not directly connected with the house, the only entrance to it being from the outside.



Ground Floor Plan.



Basement Plan.

Cottage Hospital, Saltash.

Ground Floor.—The front door, which faces the main road, opens into an outer hall, with a door on the right hand leading to the ambulance-room, operation-room, and surgery, and another door on the left leading to a waiting-room and linen store-room.

On entering the large inner hall, the first thing seen through an ornamental glazed partition and doors is the chapel. Two large wards for men, with a nurse's room between, a general bath-room, and necessary offices to each ward, and patients' garden entrance, complete the ground-floor accommodation.

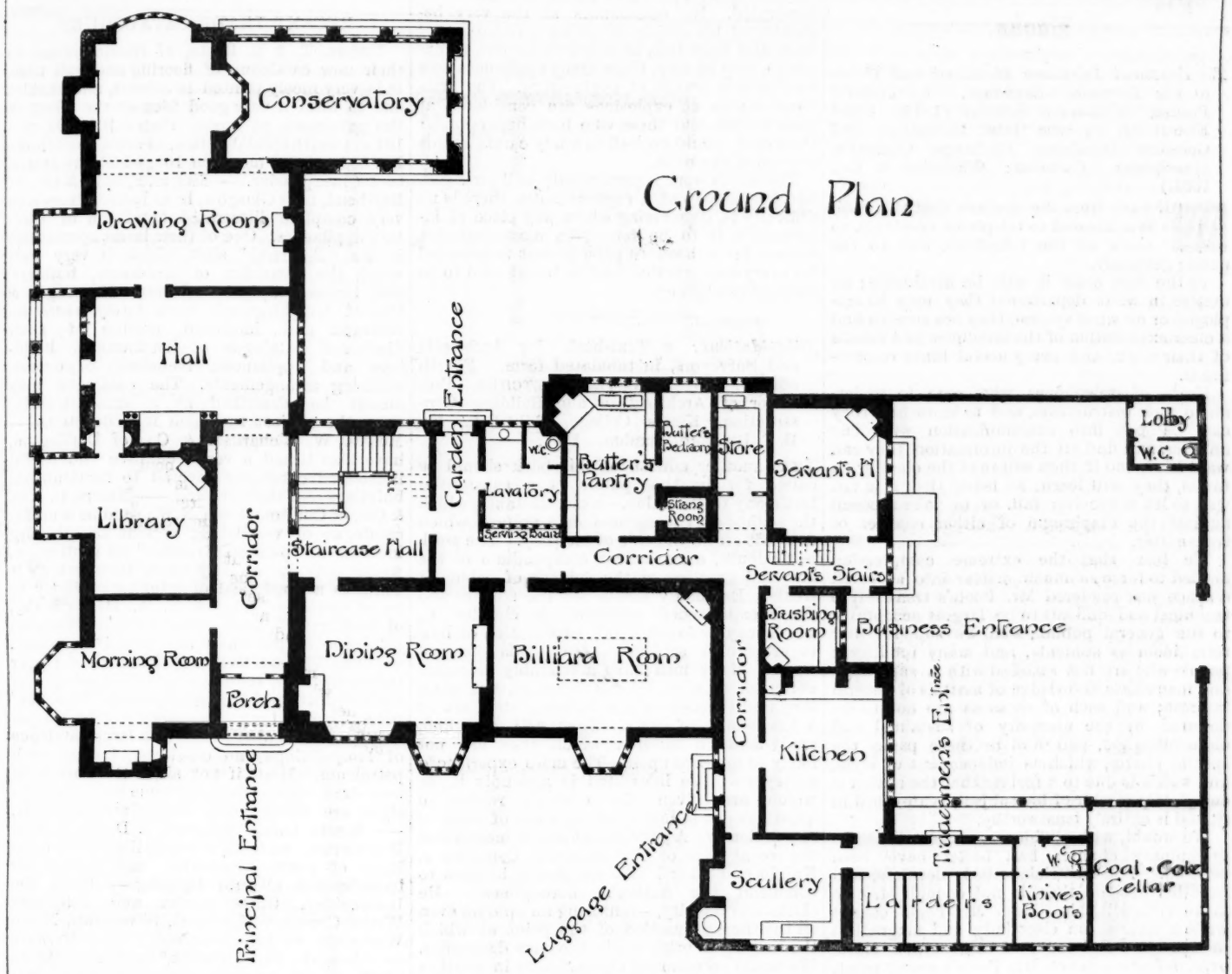
Mezzanine Floor.—On a landing formed halfway up the main stairs is placed a store-room and a servants' room. The position is specially chosen for the same so as to be convenient for both ground and first floor.

First Floor.—The chapel is again the first thing seen through another glazed partition door. A large day-room for patients, with a nurses' day-room adjoining, and joint verandah, is placed on this floor, with southern aspect.

There are also two wards for women, with nurses' room between, and necessary independent offices. Another small staircase leads to a good-sized children's ward.

Cupboards and shelves, for linen, books, medicines, drugs, and other necessaries, are amply arranged on the landings and in the different rooms.

The chapel is placed in the most convenient and central position, and is intended to be arranged so as to be the first thing seen on entering the hospital, and the last on leaving. Immediate connexion with the wards has been carefully avoided, so as to prevent the sound of the music or singing disturbing any patient whose case may be critical, but sliding shutters and doors are so arranged that it will at all times be possible for patients to hear and join



Design for a Country House: Plan (see Lithograph Illustration).

in the chapel services, while still remaining in their beds in the different wards.

The east end, which is apsidal in form, has seven small windows, the three centre lights forming, as it were, a triptych over the altar, which is well elevated, five steps above the level of the nave floor.

A small gallery is formed at the west end, entered from the first-floor landing, for the use of patients not strong enough to go downstairs.

PRIEST'S THRONE, CHAPTER HOUSE, CANTERBURY.

THE illustration of this graceful piece of Decorated Gothic stone furniture is from a drawing by Mr. Albert D. Smith, which was hung in the Royal Academy exhibition of this year.

SAINT ANDREW'S, CROYDON, NEW CHANCEL.

THIS church, which is to be reopened by the Archbishop of Canterbury to-day, was originally built in 1856, and consisted of a nave 25 ft. wide and a small chancel. At different times two aisles, 19 ft. in width, have been added. The present additions are a new chancel of the same width as the nave, a south chancel aisle giving accommodation to about ninety worshippers, and an organ chamber on the north side. New vestries have also been built. These are at the east end, as, owing to the nature of the site, no other arrangement could be made. The triple arched opening to the new chancel was adopted so as to give a greater appearance of height than would have been possible with a single opening. The new roofs are polygonal, boarded and paneled, and are painted white, the ribs being decorated and the bosses in the chancel gilded.

The work has been carried out by Mr. Wimburn, of Croydon, for 2,252*l.*, from the designs of Mr. Herbert B. Walters, architect, of Westminster.

BORWICK HALL, KITCHEN WING.

BORWICK HALL, near Carnforth, Lancashire, dates from the middle of the sixteenth century, but the old "peel" tower, round three sides of which the various parts of the building are grouped, appears to be more ancient, having walls of great thickness and windows of simpler detail.

The kitchen wing, projecting from the back of the "peel," is now the only portion inhabited. Its appearance is hardly improved by the modern sash window.

It is said that Charles II. once stayed a night here when the Hall was owned by the Bindloss family. E. HARTLEY.

DESIGN FOR A COUNTRY HOUSE.

WE give the plan and two perspectives of the design for a country-house, by Mr. A. Cox, for which its author obtained the Architectural Association Medal this year.

The principal conditions for the design were as follows:—"The house to be situated on ground having a gentle slope to the south, and sheltered by trees and rising ground on the north and north-east. The road from which the property would be approached would be along the north side." The accommodation required on the ground floor was:—"A dining-room, drawing-room, morning-room, library, billiard-room (top lighted), and conservatory, together with the usual offices, and a large square hall capable of being used as a sitting-room."

On the first-floor:—"Two double-bedded rooms with dressing-rooms attached, five single bed-rooms and bath-room, with the usual service rooms. A nursery wing on the same floor to contain day nursery, schoolroom, two night nurseries, small nurse's room, and bath-room."

The attics to contain servants' rooms, store-rooms, &c.

COMPETITIONS.

NEW MUNICIPAL BUILDINGS, BATH.—The award of Mr. Young, the assessor of the nineteen sets of plans submitted for the new Municipal buildings, arrived on the 19th inst. The first premium (100*l.*) is awarded to the plans sent in under the motto "Adelphi," the second (75*l.*) to those of "Lex," and the third (50*l.*) to those of "Wood." The *Bristol Times* of Thursday says that the author of "Adelphi" is Mr. E. W. Mountford, of London; and that the authors of the second and third premiated designs respectively are Mr. C. B. Oliver, Bath, and Mr. T. B. Silcock, Bath; but as far as Mr. Mountford is concerned, we are assured that this is a mistake, and that he is not in the competition at all.

CEMETERY CHAPEL, CADOXTON-JUXTA-BARRY. — The Barry and Cadoxton Burial Board having advertised for plans to be submitted in competition for the erection of a new cemetery chapel on a site near to Merthyrdovan Church, have selected that by Messrs. Bruton & Williams, architects, of Cardiff.

BAPTIST CHAPEL, HEATON, BRADFORD, YORKS.—The design of Mr. John Jackson, architect, Barry-street, Bradford, has been accepted in public competition for the new Baptist Chapel.

THE VICTORIA EMBANKMENT.—Mr. G. G. Rutty having again obtained the contract for the annual breaking-up, re-metalling, and rolling of the roadway of the Victoria Embankment, the work of breaking-up the old macadam with Mr. Rutty's patent macadam road "scarifier" was commenced from the Blackfriars Bridge approach on Friday, the 23rd ult., and within nineteen days that portion of the road extending from Blackfriars to Charing-cross has been broken-up, trimmed and regulated, re-metalled, and steam rolled,—something like 38,000 superficial yards, or equal to 2,000 superficial yards per working day.

Books.

The Practical Telephone Handbook and Guide to the Telephone Exchange. By JOSEPH POOLE, Whitworth Scholar (1875), Chief Electrician to the late Lancashire and Cheshire Telephone Exchange Company, Manchester. (London: Whittaker & Co., 1891.)

WE learn from the preface that this book is addressed to telephone employés, to users of the telephone, and to the public generally.

To the first class it will be invaluable; no matter in what department they may be employed or on what system, they are sure to find a clear explanation of the principles and details of their work, and many useful hints respecting it.

Users of telephones who care to understand their instruments, and to know how they can be put into communication with one another, will find all the information they can want here, and if they will read the chapter on faults, they will learn, at least, that it is not well to let a receiver fall, or to poke a pencil against the diaphragm of either receiver or transmitter.

We fear that the extreme compression needed to force so much matter into so small a space has rendered Mr. Poole's treatise too technical and difficult to be largely acceptable to the general public; still, we suppose that term includes students, and many intelligent people who are not satisfied with a superficial and inaccurate knowledge of matters of general interest; and such of these as are not to be deterred by the necessity of sustained and close attention, will find in these pages the special charm, which is independent of style, and which is due to a feeling that the author is completely master of his subject, is absorbed in it, and is entirely trustworthy.

We would, with diffidence, suggest that the preliminary chapter had better have been omitted. For electricians it is needless, and for other readers there is not enough of it to make it intelligible. Even Mr. Poole cannot write a treatise on electricity and magnetism in eighteen small pages of large type. Moreover, definition is not Mr. Poole's strong point, and, if we were disposed to cavil, it is in these pages we should find our opportunity; we will content ourselves with saying that the definitions of "strength of current," "potential," "self-induction," "electro-magnetic inertia" (why distinguish these) and "percentage conductivity" are all open to question; in the last case, though the definition is wrong, the rule given for finding the percentage conductivity is quite right, showing that the author's knowledge is in excess of his power of accurately expressing it.

The preliminary chapter is followed by an interesting and concise history of the telephone, after which we come to detailed descriptions of the receivers and transmitters in actual use, and of special systems with complex and ingenious arrangement of switchboards.

The chapter on out-door construction will be found useful by other than telephone linesmen, and those on long distance working and the localisation of faults are particularly interesting and clear.

A chapter on miscellaneous telephone apparatus and applications, and an abstract of Mr. Bennett's paper on "The Telephoning of Great Cities" conclude the volume.

The illustrations, mainly drawn to scale by the author, are numerous and excellent throughout, the type is large and pleasant to the eye, and the volume is of convenient size (and price) for the pocket.

Steam-Boiler Construction. By WALTER S. HUTTON. London: Crosby Lockwood & Son. 1891.

THE series of handbooks on engineering subjects of which Mr. Hutton is the author are already well-known and much appreciated by practical men for the clearness of the style in which they are written, as well as for the value of the information they contain; he has therefore acted wisely in not departing from his previous method of treatment in his latest work, which supplements those books he has already produced.

It would be difficult to discover anything of importance connected with modern steam-boilers that the author has not described and illustrated. He commences at the very beginning of his subject by giving a definition of heat, and from this, as a starting-point, he explains, step by step, those many appliances now used in this branch of engineering. The principal causes of explosions are considered at some length, and those who have boilers under their care would do well to study carefully this portion of the book.

The whole work is particularly well arranged, and by the help of a copious index there is no difficulty in discovering where any piece of information is to be found,—a most desirable feature for a book to possess that is intended for every-day practice, and to be referred to in cases of emergency.

Dilapidations: a Text-book for Architects and Surveyors, in tabulated form. Fourth edition. By BANISTER FLETCHER, Professor of Architecture and Building Construction, King's College, F.R.I.B.A., &c. B. T. Batsford, London. 1891.

THAT another edition of this book should be called for by the public is a substantial testimony to its value,—a circumstance which the author duly recognises in a preface which does not err on the side of modesty. The work is, no doubt, an excellent compendium of the law and practice of the subject of which it treats. Especially useful for the student and the inexperienced architect is chapter v., where may be found a full explanation of how to prepare a schedule of dilapidations and waste. Many men have a tolerably accurate notion as to what these consist of, but when they find themselves in a building they are at a loss where to begin. They will here find, ready-made, a method which they are not likely to improve upon. The more experienced surveyor will be interested in appendix ii., in which are given the author's replies to questions put to him touching cases of more or less difficulty. A good report also is included of the recent case of The Skinners' Company *v.* Knight and others. We are glad to be able to commend the author's thoroughness. He skirks no difficulty,—venturing an opinion even on the thorny question of the point at which the bulging of brick walls becomes dangerous. We would recommend the omission in another edition of some passages of a somewhat gossipy and irrelevant character (*e.g.*, p. 29), which are out of place in a work of this description.

Neue Berliner Bauten, 1890–91 *zusammengestellt von Wilhelm Klee.* (Berlin: E. HOKENHOLZ, 1891).

THIS cheap little collection of very clearly-printed photo-lithographic views gives a good idea of the present state of architectural design in Berlin. Some forty buildings are shown, public offices, town houses, and villas, all completed during the last twelvemonth; and, although several exceedingly ugly pieces of work figure in this number, the selection given is a fairly representative one. Several sheets of plans attached to the collection of views form a useful supplement. We hear that the collection 1890–91 is to be the first of a regular series, appearing every autumn.

We have received a copy of "Macdonald's Scottish Directory and Gazetteer" for 1891-92. It is published by William Macdonald & Co., 12, St. Giles's-street, Edinburgh, and contains a coloured map of Scotland, and plans (to a small scale) of Edinburgh, Glasgow, Dundee, and Aberdeen. This is the eighth edition of the work, which has been enlarged and improved in several ways, and will be found very useful, although, in common with other directories, it is not perfect, judged by tests which we have applied to the Edinburgh, Glasgow, and Paisley sections. The directory would be increased in usefulness and reduced in bulk if the advertising element were a little less prominent. Some names in the lists of professional men, tradesmen, manufacturers, &c., are placed in blacker and heavier type than other names in the same lists,—presumably because such prominence has been paid for. At any rate, no other reason is assigned. We are sorry to see that some names in the lists of architects are thus signalised, but they are not those of the most distinguished practitioners.

RECENT TRADE CATALOGUES.

Messrs. T. & R. Boote, of Burslem, send us their new catalogue of flooring and wall tiles. It is very nicely printed in colours, and enables one to form a very good idea of the effect of the pavements at large. Plates 102, 103, and 104 are worth special notice, as are also patterns No. 608 and 609 on plate 100, which are stated to be inexpensive.——Messrs. Shanks & Co., of Barrhead, near Glasgow, have issued a new and very complete illustrated catalogue of sanitary appliances. One of their latest specialities is the "Balmoral" sink, which is very well worth the attention of architects, builders, and house-occupiers.——Messrs. Messenger & Co., of Loughborough, have lately issued an enlarged and improved edition of their illustrated catalogue of horticultural buildings and appliances, including, of course, warming arrangements. The catalogue may almost be described as a small treatise upon the subject to which it is devoted.——Messrs. W. Richardson & Co., of Darlington, have also issued a very complete and useful illustrated catalogue devoted to horticultural buildings and their heating.——Messrs. C. Kite & Co., of Chalton-street, N.W., send us a useful catalogue of ventilating appliances. It also includes a "practical treatise" on ventilation, which may be usefully read, inasmuch as it contains a good deal of information likely to be of service.——Messrs. T. A. Heaps & Co., of Huddersfield, have issued a small illustrated catalogue of hot-water and steam apparatus. ——The Wenham Company, Limited, of Upper Ogle-street, W., send us a revised catalogue of their effective and now largely-used "Wenham" patent lamps for gas.——Messrs. John Harper & Co., of Willenhall, send us a large catalogue of lamp-fittings and oil-stoves, for use with petroleum. Most, if not all of the work is in cast-iron, and though some of the designs are fairly good, others are execrable. ——Messrs. Laing, Wharton, & Down, of New Bond-street, send us a useful illustrated catalogue of plant, accessories, and fittings for incandescent electric lighting.——From the Indiarubber, Gutta-percha, and Telegraph Works Company (Limited), Silvertown, North Woolwich, we have received a trade *brochure* on "Electric Light Cables," which treats of overhead and underground cables, and gives tables of standard sizes of conductors and cables.——Messrs. Coulter & Co., of Batley, Yorks, send us a descriptive circular of Coulter & Harpin's patent stone and marble dressing and moulding machine, or "steam mason."——Messrs. J. Sagar & Co., of Halifax, Yorks, have just issued a small catalogue showing some very useful and compact wood-working machines.——Mr. H. A. Hobday, of Chatham, has sent forth a very handy and useful illustrated catalogue of tools of all kinds for carpenters and joiners, wood-carvers, fret-workers, plumbers and painters, engineers, and, in fact, for men of all trades.——The Bath Stone Firms (Limited) send us a *brochure* containing a description of "Fluate," a process "for hardening and preserving calcareous building stones and marbles."——Mr. Andrew Potter, of Melbourne Works, Wolverhampton, sends us catalogues of his specialities in the way of waterproof oil sheets, roofing felt, and other articles in demand by builders and others. The same manufacturer gives his name to "The Potter Excelsior Wire-armoured Hose," applicable for steam or water.——Messrs. Pryke & Palmer, of Upper Thames-street, send us a new and bulky illustrated catalogue of stoves, grates, ranges, lock and door furniture, hot-water, gas, and electric light fittings, and builders' hardware generally.——Messrs. Adams & Co., of York and elsewhere, send us two illustrated catalogues of their sanitary specialities, one of them being devoted to stoneware and earthenware goods, and the other to ironwork. The first includes illustrations and descriptions of automatic trough-flushing closets and latrines, well-adapted for schools, barracks, factories, &c., besides wash-out and other water-closets of good type, urinals, lavatories, baths, &c. The ironwork section includes lamp-standard or other ventilating columns for sewers, flushing-chambers and syphons, side ventilators for sewers, revolving-disc and other penstocks, flushing-valves, manhole covers, &c.——Mr. W. Cooper, of 751, Old Kent-road, forwards his illustrated price-list of conservatories, greenhouses, vineries, &c. It includes some specialties in the shape of tenants' fixtures which are well worth the attention of amateur

gardeners and florists.——Messrs. George Farmiloe & Sons, of 34, St. John's-street, E.C., have just issued their new general catalogue of sanitary appliances, painters', plumbers', glaziers', and decorators' materials, &c. The catalogue consists of more than 700 well-printed and copiously-illustrated pages, and gives choice of a large selection of sanitary appliances of all kinds and by various makers. Of Messrs. Farmiloe's own specialties we may name the "Water Lily" and the "Smithfield" pedestal flush-out closets. Plumbers' brass-work, pumps, steam and hot-water fittings, brushes and tools of all kinds for painters, gilders, glaziers, and other tradesmen, go to make up what appears to be a very complete and useful catalogue.

Correspondence.

To the Editor of THE BUILDER.

TESTS FOR ROAD MATERIALS.

SIR,—Statements have from time to time been made by quarry-owners and others wishing to introduce or advertise various descriptions of stone in which they are interested, that their particular material resists a very much higher thrusting stress than other kinds, and that it is, therefore, as good as, or greatly superior to, others used for road-making purposes.

Now, our experience as practical road-makers leads us to quite an opposite conclusion, and we are convinced that, not only are the figures quoted in support of the above argument in many cases incorrect, but the deduction drawn from them is fallacious.

In order to prove this to others, we prepared specimens of three different kinds of stone, viz.:—

(I.) Common black flint, taken from a railway cutting through chalk, near Grays, in Essex.

(II.) Cherbourg stone, which is a quartzite, said to contain 93 per cent. of silica.

(III.) An ordinary specimen of good Guernsey granite.

These we submitted to Messrs. D. Kirkaldy & Son, the eminent testing engineers, for testing their resistance to crushing stress, and we append the results for your information.

Results of experiments (referred to in the above letter) to ascertain the resistance to thrusting stress of various specimens of road-making material, by David Kirkaldy & Son, 99, Southwark-street, S.E., in 1890 and 1891, for Messrs. John Mowlem & Co.

Blocks bedded between pieces of pine ⅜ in. thick. All carefully ground:—

Test No.	Name of Quarry and marked.	Dimensions.	Base Area.	Crushed, steelyard dropped.		
				Stress.	pr. sq. in.	pr. sq. ft.
Z		Inches.	Sq. in.	Lbs.	Lbs.	Tons.
2,522	Flint from chalk beds	4·80 2·30×2·80	6·44	248,200	38,540	2,478·5
2,523	Ditto	4·80 2·30×2·80	6·44	168,480	26,161	1,682·4
			Mean	208,340	32,350	2,080·4
Y						
2,634	2	4·37 2·58×2·58	6·66	213,860	32,111	2,065·0
2,633	2 "Silica" (Cherbourg) ...	4·37 2·58×2·58	6 66	208,640	31,327	2,014·6
			Mean	211,250	31,719	2,039·8
2,636	1	4·37 2·56×2·56	6·55	197,320	30,125	1,937·3
2,635	1 Guernsey	4·37 2·56×2·56	6·55	176,490	26,945	1,732·8
			Mean	186,905	28,535	1,835·0

You will see that the common black flint shows the highest resistance, Cherbourg quartzite (which is all but pure silica) comes next, and Guernsey granite occupies the third place.

Of course, the merest tyro in road-making knows there is not the slightest comparison between the durability of a flint road and that of one made with Guernsey granite; and it is, therefore, self-evident that the test of resistance to crushing stress is no indication of the wearing qualities of a stone for macadamising purposes, because, when thus tested, the admittedly worst material gave the highest, and the generally-considered best material the lowest results.

As we have observed that a great many road surveyors and members of local boards attach great value to a high resistance to crushing stress, and in many cases choose a stone solely on account of its possessing this property, we have taken the liberty of sending you these remarks and figures, and trust they will be interesting to you. We think they show clearly that other qualities besides the one in question must be looked for, and that *toughness* is quite as essential as high resistance to crushing stress, the latter being generally accompanied by brittleness, leading to rapid pulverisation under the practical test of traffic.

Should you wish to see Messrs. D. Kirkaldy & Son's original test certificates, we shall have much pleasure in showing them to you. They are always at our chief office for inspection.

JOHN MOWLEM & Co.

Millbank, Westminster, October 28, 1891.

ROGERS *v.* JAMES: RESPONSIBILITIES OF AN ARCHITECT.

SIR,—The decision of the Judges of the Appeal Court in the cause Rogers *v.* James, decided on the 17th inst., and reported in the *Times* of the following day, is, I think, of sufficient interest to the architectural profession to bear some comment.

The plaintiff, an architect, sued the defendant for 120*l.*, balance of professional fees, the major portion for designing and carrying out furniture and decoration, work for which he charged 10 per cent. Upon this claim a special jury at Maidstone, by their verdict, awarded 58*l.* The defendant James set up a counterclaim of 1,000*l.* for negligence on the part of the plaintiff, and the verdict of the jury awarded him 90*l.*

It was proved on the trial that the contractor, taking advantage of the absence of the architect, who paid daily visits at the time, had omitted some portions of the concrete under the footings, and this was not discovered until too late to insert it. The subsoil is a hard, compact gravel, and that concrete is not necessary for the stability of the structure is proved by the fact that the walls, having been erected three years, do not show any sign of settlement.

The architect, having this fact before him, considered that the justice of the case would be met by deducting from the final certificate a sum equal to the cost of underpinning the walls in cement where it might be necessary. This he was empowered to under the clause of the contract providing that "the decision of the architect with respect to the amount, state, and condition of the works actually executed, and also in respect of any and every question that may arise concerning the construction of the present contract, or the plans and specification, or in any wise relating thereto, shall be final and without appeal."

That the judgment of the architect was correct has again been proved, by the fact that the defendant, having put into his pocket the amount allowed for underpinning, has not thought it necessary to expend it.

But when the architect sues for the payment for his services then comes up the counter-claim, and it is argued that he is responsible for the fraudulent acts of the builder (who is a bankrupt), although the final certificate has been accepted by both parties, and ratified by the Court of Queen's Bench.

The lessons to be learned by this case are:—

1. In the absence of a clerk of the works, an architect must be on the works during the entire hours of labour, thus preventing him from carrying out more than one work at a time.

2. The architect is responsible for any deficient work put in and covered up during his absence.

3. The client can claim from the builder the value of any work omitted, and, having obtained it, he can again claim it from the architect. (In this case the amount claimed by the builder was over 700*l.*, and the amount of the final certificate was 160*l.*, the original contract amount being 1,900*l.*)

Bromley, Kent. FREDK. ROGERS.

TASTE IN JEWELLERY.

SIR,—The recent article in the *Builder* on the prevailing taste in jewellery has attracted a certain amount of attention, and it is satisfactory to think that it is likely to do some good. Spurs, whips, or horse-shoes, as devices for brooches or breast-pins, may be tolerated in the case of huntsmen in red coats and top-boots in the saddle, or in that of jockeys, trainers, cab-drivers, and stable-boys; but to see such badges on gentlemen in visiting costume, or even in undress of a morning, rather savours of the "stable-mind;" and to see a young lady decorated with horse-shoes is a painful sight. A few days ago I was in a jeweller's shop, and as he was serving a customer who had entered before me I amused myself with looking over his trinkets, laid out for inspection in the several cases. The devices for personal adornment were many and various, but among the most numerous the horse-shoe seemed to prevail. After the customer had left, I started a conversation on the subject of the prevailing taste, as treated of in the *Builder*, and remarked on the number of horse-shoes in his cases, and I inquired whether he had anything like an average sale for them. He smiled, and replied that he sold more horse-shoes than anything else,—even to ladies. I was surprised at this, and would willingly know how he could account for it. He told me that many people thought it was lucky. This amused me, for I was reminded that if we look into the boats that lie on the beach, at many of the seaside places on the coast, we shall see old horse-shoes nailed in most of them. The sailors say "it is to keep out the witches." They may also be sometimes seen on barn-doors and sundry ancient buildings. In this case, it would seem that the taste is tainted with a little superstition. P. O. HUTCHINSON.

THE LATE MR. DECIMUS BURTON, ARCHITECT.

SIR,—Observing Mr. Henry Wilson's inquiry, and also your remarks in last week's issue of the *Builder*, perhaps you will allow me to give the following information thereon.

In the year 1865 I carried out the alterations to the vicarage at Isleworth for the Rev. H. M. Richards, vicar, which I believe was the last work that Mr. Decimus Burton was architect for. The works were directed by his nephew, Mr. Henry M. Burton. Subsequently I was engaged in various contracts from the same office, No. 64, Spring-gardens, Westminster, S.W., under Mr. Henry M. Burton, who I know succeeded to the business of his uncle. I may just mention that in 1866 I built a house at Eltham for Mr. T. R. Jones; in 1871, the new wing to the Oriental Club, Hanover-square; in 1872 and 1873, altered Maurigy's Hotel, No. 1, Regent-street, into a club-house; 1876 and 1877, additions to Headmaster's house, Harrow, for Dr. Butler; 1877 and 1878, alterations, &c., to Grove House, Regent's Park, for Mr. Thomas Green, M.P. These works, which were extensive, and many others I could name, were executed by me, from drawings and specifications prepared by Henry M. Burton, who was compelled to relinquish work through ill-health, and shortly afterwards died, much respected. My object in furnishing these particulars is to show that the practice of Mr. Decimus Burton did not cease on his retirement, but was carried on by his nephew, Mr. Henry M. Burton. As regards the drawings referred to, it is just possible that they may be in the possession of Mr. Edgar, the son of Mr. Henry M. Burton, who, I believe, resides at Bournemouth.

WILLIAM J. MITCHELL.

CARPENTERS' STRIKE.

SIR,—The question having been put to me several times, may I ask you to kindly state in your next issue that I am not the Mr. Richards referred to in your report of the arbitrator's decision, as representing the Operative Bricklayers' Society.

H. W. RICHARDS.

66, *Gloucester-road, Regent's-park.*

WATER ANALYSIS.—The *Sanitary Record*, in an article on this subject, writes:—"It sometimes happens that chemistry entirely fails to diagnose pollution in a water, whilst the microscope reveals such particulate matter as, for instance, starch-grains, raw or cooked, vegetable hairs from the tea leaf, spiral vessels from roots such as carrots or turnips, cells, animal hairs, muscle fibres, dyed cotton and woollen filaments, peopled or not with a population of living organisms. In our opinion the microscope is much too little used by water analysts. It sometimes happens that the physical properties, odour, colour, turbidity, character of residue on evaporation, and behaviour of residue on being charred and incinerated, coupled with the microscopic evidence, is in opposition to the evidence yielded by the chemical process. This, we admit, is not often the case, but when it does occur we think the analyst should weigh these forms of evidence well, and even in the absence of abnormal chemical evidence the water should be condemned as unfit for human consumption, or at all events attention should be drawn to the facts in the analyst's report."

The Student's Column.

MARBLES.—XXII.

IRISH MARBLES (*continued*).

THE preceding article dealt with the Irish marbles raised chiefly from the Carboniferous Limestone; we shall now treat of those from the metamorphic rocks of the island. Following the classification of Mr. Kinahan,* as before, we may divide the latter class into two groups: (1) Metamorphic Limestones, and (2) Serpentines.

The majority of the rocks of both classes are probably of Lower Silurian or Cambrian age, from which it will be observed that they are amongst some of the most ancient rocks in the country.

Metamorphic Limestones.—These were originally limestone or dolomite, and, with few exceptions, are white, or shades of white, some of the better kinds being tinted grey, pink, or green; all are more or less schistose, whilst some are thin-bedded, those that are massive generally rising in rude, unshapely blocks. The authority above quoted states that the stones are for the most part coarsely crystalline, and consequently not able to compete with the Italian stones; whilst those of a creamy character, as far as has yet been discovered, are also disqualified owing to their either being too thin-bedded, or jointy, which prevents them being raised in blocks of sufficient size. On this account many hand-specimens indicate a beautiful marble equal to any elsewhere, whilst in the quarry these stones are found to be of such small dimensions as only to be suitable for the manufacture of articles of *vertù*.

Before leaving this subject we may mention that several published lists of marbles, both British and foreign, are very misleading, inasmuch as they are frequently based on information obtained from hand-specimens on exhibition. The great Exhibition of 1851, for example, was instrumental in bringing together a large number of samples of marbles, and the inference which might naturally be drawn therefrom was that such marbles could be purchased in the market. Quite a number of writers have assumed the *bona fides* of such specimens as eligible as materials for decoration, and have drawn up formidable lists relating to marble quarries which are not, and never have been, in existence. This deception is partly fostered by the fact that several polished stones in our museums are generally regarded, even by their curators, as ordinary marbles of commerce. Many of these misleading stones have been polished out of mere curiosity, and with the exception of duplicate examples in the mansions of the lords of the manors upon whose estates they were respectively found, they constitute the only specimens of the kinds in existence. Unless a marble be well-known in the market, a visit to the spot whence it was obtained is highly desirable before classing it amongst those available for ornamental purposes. These remarks especially apply to many Scotch and Irish marbles.

Several white and red metamorphic limestones, which, strictly speaking, are marbles, are met with in co. Donegal; but very few have found their way into the hands of the marble-worker. In the promontory of Fanad, north of Kindrum Lough, for example, a white stone occurs which is partly coarsely crystalline and partly compact, but it has not yet been properly opened up. Again, in the townland of Drumlackagh, and at Dunfanaghy, Kinclevin, Glenveigh Castle, Gartan, Magheranan (near Letterkenny), Kilmacrennan, and at Kiltale, near Convoy, all of which places are in the county of Donegal, trials have been made and the marbles reported upon; but very little else appears to have been done. On the other hand, marbles from that county have been more or less raised at Ballymore, four miles from Dunfanaghy, where the stone is creamy-white, in places clouded with brown; and at Dunlewy, near Gweedore, a marble clouded white, and tinted with shades of green and pink, occurs in small blocks.

In various parts of co. Galway, stones which might be worked into marble have been found. South of Letterfrack, in the Hill of Creggs, white limestones of excellent quality are met with, but, unfortunately, only in blocks of small dimensions.

In the metamorphic limestone of Donegal cropping out in Glendowan, near Lough Veagh, a ribanded sienna-coloured stone occurs; and at Lough Auna, in Galway, there is a maculated stone of similar tint.

Black marbles in this group are recorded from Kintale, in Donegal, and at Carricksheedy, in Londonderry.

Serpentines.—The Irish marbles known by this name are not, as a rule, true serpentines, but are to a certain extent incorporated with peculiarly altered limestones and dolomites, and include also some kinds of altered igneous rocks. As Mr. Kinahan points out, the name "serpentine" is more applicable to the altered limestones than to the volcanic rocks. The only rocks of commercial value amongst the former group are exploited in co. Galway, and are known, generically, as "Connemara marbles." Describing the geological features of this and adjacent rocks, the late Sir Roderick Murchison observed* that, in proceeding from Roundstone Bay on the south, low isles and headlands of granite followed by syenitic and hornblendic rocks throw off highly altered micaceous and quartzose schists, with courses of white and grey crystalline limestone, which, as the mountain of Ben Glenisky (one of the Twelve Bins of Connemara) is ascended, are seen to be followed by strong masses of granular white quartz rock (manifestly an altered sandstone), which alternate with mica-slate. Interlaced in the lower part of this series, and lying in depressions between Ben Glenisky and Ben Bawn, and thence ranging to the westward, are certain crystalline limestones, one course of which is grey and white and another is the beautiful green marble, or serpentine, of Connemara. They are overlaid by granular quartzites and mica-slates. The green marble is enclosed in mica-schist and quartz rocks.

Connemara "greens" are very varied in tint. Some, says Mr. Kinahan, are dark green, uniform or clouded; others are leek green or light green; whilst the majority are mottled or spotted, or streaked and variegated. The famous Ballynahinch marble quarries from which, in times gone by, most of the Connemara marble was obtained, occur in the valley of Owenglin. The road from them offers such difficulties that the transport of the stone is seriously interfered with. Fine examples of the material may be seen in the new museums at Oxford and Trinity College, Dublin. A "moss" serpentine, of a pale olive-grey tint, full of dendritic markings, was extensively worked to the east of Barnaoran. Near Lissoughter there is a quarry in stone of uniform or clouded green, parts of which are dark but translucent. Very good-sized stones have been raised there in rough blocks and of fine quality. It has been found more profitable to carry them unsquared to Cloonisle for shipment than to square them in the quarry. The Connemara marbles found in the American markets seem to have been sent from quarries near Lissoughter. It is interesting to note that the largest column of the marble yet obtained, which is 9 ft. 9 in. in height, was wrought out of a block raised near that village. This material has been used in the Manchester Exchange, Rochdale Town Hall, St. John's College, Cambridge, St. Mary Abbott's, Kensington, &c.

Connemara green marble is found also north of Clifden, variegated with spots or streaks; as well as between Loughauna to Loughnahillion in the eastern continuation of Streamstown Bay Valley, where there is a great variety; and at Glenisky, Derryclare Lake and islands, and other places.

This marble, although of great beauty, has been so injudiciously used in exteriors that it is "marked" as a bad weather stone. Such materials, as we have repeatedly observed, are not at all suited to withstand the disintegrating effects of the atmosphere, and they should only be used in interior work. Professor Hull has remarked with reference to this marble that small tablets let into the outside wall of the Museum of Trinity College, Dublin, had become tarnished in the space of ten years; whilst within, the columns which adorn the hall of the building had retained their polish.

The ophytes, which constitute one of the sub-divisions of the serpentines altered from volcanic rocks, are, generally speaking, dark green in colour, relieved by streaks and spots of various lighter tints. Although not in the market, they are said to be equal to, and perhaps even surpass, in beauty some of the foreign stones of the same class. They are not of rare occurrence, having been recorded from Galway, Mayo, Sligo, Tyrone, Waterford, Wexford, and Wicklow.

Eklogyte is very like ophyte in appearance. It is usually a speckled greenish-brown rock, and is found in different parts of Galway, Mayo, and Sligo. It is not worked, though extremely handsome in appearance.

Steatite occurs in Donegal, Galway, Mayo, and Wicklow, and, though the material is very suitable for the manufacture of minor ornaments, it still remains untouched.

The rock pyrophyllite, or camstone, which is allied to the steatites, could be raised in Cork and Donegal. It has been recognised for years in the latter county, and was used for architectural purposes, especially in the ancient churches of Balleekan and Killydonnell and structures in the vicinity. At Gibbstown, near Castlefin, there is a quarry, and the material has also been dug in places between Raphoe and Letterkenny, in Carrowtrasna, west of Lough Akibbon, Cloonkilly, and westward of Rathmullen.

Several porphyries are met with running through the Carboniferous Limestone of the south of Ireland. A very handsome one, which vies in beauty with the well-known *verde antico*, is found, also, at Lambay Island, off the eastern coast. It consists of a dark green base, in which are distributed numerous light green crystals of orthoclase. This, like many of the other ornate stones of the "Emerald Isle," has not, however, got much beyond the "exhibition stage."

* G. H. Kinahan, "Journ. Roy. Geol. Soc. Irel." 1887. Pp. 147 *et sqq.*

* "Siluria," 5 ed. 1872, p. 180.

OBITUARY.

MR. JAMES FARRELL, R.H.A.—The *Freeman's Journal* announces the death of Mr. J. H. Farrell, R.H.A., the sculptor, which occurred at his residence, Mountjoy-square, Dublin, on the 20th inst. Mr. Farrell had only been ailing for a short time.

MR. THOMAS ANGELO MOORE, architect, who died at Sunderland a few days since, at the comparatively early age of fifty-one, was the eldest son of the late Thomas Moore, who was, we believe, the very first architect who, more than half a century ago, established a practice in Sunderland, where the profession is now represented by a goodly number of more or less prosperous practitioners. The deceased gentleman's works, like those of his father, are mostly in Sunderland itself. His most recent, and reputedly best, building is "the People's Palace," in High-street West, which was opened only a few weeks ago. The interior of this little theatre is said to be a very good one.

MR. A. HAGGIS, Deputy-Chairman of the London County Council, elected in succession to the late Mr. Firth, M.P., two years ago, died suddenly on Tuesday morning, while in an omnibus on his way to the offices of the Council. He was in his fifty-eighth year, and was formerly in business in Southwark and elsewhere as a saw-mill proprietor and timber merchant.

GENERAL BUILDING NEWS.

NEW CHAPEL, QUEEN'S COLLEGE, CAMBRIDGE.—The *Cambridge Review* describes this new chapel as designed in the style of the later English Gothic architecture, in harmony with the College buildings. Bricks and stone are used, being the same materials as employed in the old buildings. The bricks are thin ones, as in the ancient work. Ancaster stone is largely used. The main external dimensions are 107 ft. for the length of the building, with a total external width of 34 ft. The proportions are rather lofty, the eastern gable showing well in Queen's-lane, with its large window of seven lights, while the sides of the chapel have tall windows of three lights, one in each bay. All the windows have tracery characteristic of the style. The south entrance to the ante-chapel is enriched with stone carving and panelling. The whole effect aimed at is one of dignity of proportion rather than of any profusion of ornament. Internally the chapel shows a panelled and painted roof, the eastern part being enriched with a good deal of gilding, and there is an east window of richly-painted glass. The chapel is furnished with an enriched screen of carved oak, on which an organ is to be placed. There are rows of stalls, surmounted by panelling and an overhanging cove, as a continuous canopy. This oak work throughout is well carved. The reredos is also of richly-carved wood-work, and three pictures, formerly in the President's Lodge, are worked up into it. The side windows have some glass, done some years ago, that came from the former chapel. The architects are Messrs. Bodley & Garner, of Gray's Inn, and the builders are Messrs. Rattee & Kett. The east window glass is by Mr. E. Kempe. It contains the Crucifixion and single figures of saints, among them being St. Bernard and St. Margaret, the patron saints of the College; St. Etheldreda to represent the diocese, and St. Botolph to represent the parish in which the College stands.

New Schools, Leeds.—Two new schools were opened recently at Leeds, one being a day industrial school, situated in Czar-street, Holbeck, and the other an elementary school at Harehills, Roundhay-road. The Czar-street Day Industrial School has been built for the industrfal training and elementary education of neglected, wandering, or truant children sent thither by order of the magistrates. The hours of detention are from 8 a.m. to 6 p.m., and provision is made for the constant occupation of the children during that time. The building is of two stories. The ground floor contains the dining-room, kitchen, scullery, store-rooms, disinfecting-closets, bath-rooms, and shallow swimming-bath. The upper floor provides an assembly-hall and school-room. There are separate approaches for the boys and girls, and separate staircases. The dining-room is 76 ft. long, 32 ft. wide, and 16 ft. high. There is a large workshop for the teaching of simple joinery and easy manual occupations. There are covered playgrounds under the workshop. A caretaker's house has been erected in one corner of the site. The assembly-room on the upper floor is 50 ft. by 30 ft., and, by the movement of sliding partitions, it can be enlarged to 63 ft. by 50 ft. There are five class-rooms when the sliding screens are drawn. The heating is on the low-pressure steam system. The principal contractors have been—For the brick and masonry and carpentery and joinery, Messrs. Gould & Stevenson; for the ironwork, Messrs. Taylor & Parsons; for painting, Mr. G. Thompson; for slating, Messrs. Atkinson & Son. The works have been carried out from the plans and instructions of Mr. Landless, Architect to the Board. The estimated cost of buildings and fittings is 7,000*l*. Harehills school is erected on a site in Roundhay-road, near Harehills-lane. The plan is on the central hall system, and consists of a building two stories in height. The building is approached by two entrances from Roundhay-road, one for the boys and the other for girls; whilst egress is obtained by short flights of steps to the covered playground, under and at the back of the building. Cloak-rooms are provided, as well as teachers' rooms. The central halls measure 74 ft. by 32 ft. The total accommodation of the school is for 1,410 scholars, exclusive of the central halls. The building is constructed of brick, with stone dressings. The principal contracts have been carried out by Mr. James Wood. The work has been carried out under the superintendence of Mr. Landless.

Altar Rails, St. John's Church, Wigan.—This fine Italian Church, built about the year 1820, has been embellished by the erection of new altar rails of marble and alabaster, and the sanctuary has been also enlarged. The work was placed in the hands of Mr. C. Hadfield, of Sheffield, from whose designs the whole has been carried out by Messrs. J. & H. Patteson, sculptors and marble merchants, of Manchester, and Mr. Preston, contractor, of Wigan. The rails follow the architectural lines of the chief features of the church, being straight in front but curved at the sides, and upwards of 52 ft. in length. The balustraded portion is composed of light-coloured alabaster of the finest quality, relieved by panels of Seravuzza marble. The base and capping of the balustrade are formed of richly-tinted and veined Rouge Griotte, while the step and riser on which they stand is dove marble. The flooring and new arrangement of steps which the rails enclose is laid with pitch-pine boards in patterns, wax polished, and partially carpeted.

Jewish Working Men's Club, Great Alie-street.—The London County Council having called upon the Jewish Working Men's Club a considerable time ago to construct a fireproof floor, in place of the then existing timber floor, to their entertainment-room, and to provide two proper fireproof staircases and proper exits, the executive, in making these alterations, determined to enlarge the straitened accommodation of the club, and accordingly instructed their architect, Mr. Lewis Solomon, to prepare plans giving the required accommodation, which plans were subsequently reduced to come within the limit of expenditure. In addition to the existing entertainment-room, the building now gives accommodation on the top floor for a green-room and artistes' dressing-rooms, communicating with the stage, and the necessary conveniences for the use of the audience and stage; also a small refreshment-room. A gymnasium store is also provided, the entertainment-room being intended for the club's recreation in this direction. On the principal or club floor are provided a general club-room, 50 ft. by 25 ft. (average size), centralised for convenient access to the several rooms around, viz.:—Debating-room, 34 ft. by 16 ft.; Institute for lads, 37 ft. by 17 ft.; library and committee-room, 18 ft. by 14 ft.; and a room 18 ft. by 13 ft., for the use of female members, with retiring-room attached. On the lower floor are a billiard-room, 50 ft. by 18 ft., fitted with three tables; a domino-room, 28 ft. by 17 ft.; a room for the use of friendly societies, 20 ft. by 16 ft., this last having also a separate additional entrance from the street. On this floor also occur the kitchen and offices for the use of steward, with a separate entrance for his convenience. In addition to the two separate fireproof staircases in Great Alie-street leading to the entertainment-room, a third staircase has been provided as an extra exit into Brownson's-court in the rear. The front abutting on to Great Alie-street has been designed to suit the purpose of the club; it is of ordinary stock bricks, with dressings of red bricks and red Corsehill stone, and with large bay windows in the Queen Anne style. The builder, who has carried out the alterations under the direction of the architect, is Mr. Scott, of Blomfield-street, City, and the fireproof floors and staircases have been executed by Messrs. Homan & Rodgers. The cost of the work has been slightly over 3,000*l*. The building was opened on Tuesday evening last by Lord Rothschild.

Extension of Perth Station Hotel.—The joint station committee of Perth have resolved to add thirty-five bedrooms to the Station Hotel. The plans have been prepared by Mr. Andrew Heiton, F.R.I.B.A., and Messrs. James Hay & Son, Perth, have secured the contract for the work.

Dominican Church, Galway.—On the 25th ult., the new church erected by the Dominican Order, was dedicated by the Rev. Dr. M'Cormack. The church is built of native stone and granite. The arches are 22 ft. from centre to centre. The windows are moulded on the joints and arches, and are single lights, coupled, or as triplets, with one traceried window in the chancel. The doorways are deeply recessed with shafts and moulded arches, having chevron ornaments and labels, the tympanums of the heads having sculptured subjects in Carrara marble. The design of the building, which is in the Norman style, comprises on plan,—chancel, nave, and aisles, and chapel with sacristy. Five large and one small arch on either side span the spaces between nave and aisles, and support the clearstory over, with its coupled, round-headed windows. The arches carrying the clearstory are moulded, and are supported by columns with moulded bases and reeded caps. The shafts of the column are monoliths of granite, rectangular in form, with rounded angles. All the cut stone is of blue limestone from the vicinity, chiselled, and the walls are of the same material, pitch-faced on the exterior, with chiselled bands. The roofs are divided into bays, with moulded pitch-pine polished principals, having semi-circular arched ribs, and resting on corbels with moulded cornices panelled between, and stucco plastered for future decoration. The chancel ceiling is semi-circular, barrel vaulted, with panels as in the nave for embellishment. All the windows are glazed in geometric patterns, with coloured ruby margins. The floors are of wood, with tiled passages, and the west end has an organ-gallery, with glazed inner shelter porch underneath. The total internal length is 110 ft., and the width 52 ft. The works have been executed by Mr. James Costello, builder, of Galway, and have been carried out from the designs and under the supervision of Mr. William Hague, architect, of Dublin.

St. Chad's Schools, Far Headingley, Yorkshire.—Mr. E. Beckett, M.P., laid the foundation-stone on the 12th inst. of the new schools to be provided for the parish of St. Chad's, Far Headingley. Besides supplying school accommodation, the building will include a room 48 ft. by 32 ft., which is expected to prove serviceable for parochial purposes. The buildings are to be of brick, with stone dressings and red-tiled roofs. The architects are Messrs. Perkin & Bulmer, and the contractor Mr. Thos. Bateson.

Memorial Buildings, Rainhill, Lancashire.—The Evans Memorial buildings, which have been erected at the Holt, Rainhill, Lancashire, were opened on the 5th inst. The buildings have been erected at the sole cost of Miss Ruth Evans, in memory of her brother, the late Mr. Joseph Evans, of Haydock, to whose memory also Miss Evans is erecting church and school buildings at Haydock, and elementary school buildings at Ashton-in-Makerfield, the total cost of the combined schemes, including land, being about 25,000*l*. The whole of the buildings are rapidly approaching completion from the designs and under the supervision of Mr. Thomas W. Cubbon, architect, of Birkenhead, the contractors being Messrs. Hughes & Stirling, of Liverpool and Bootle. The principal portion of the Holt buildings is the church, providing sitting accommodation on the ground-floor for about 650, having organ-chamber, vestry, and cloak-room accommodation at the rear. The style of the design is Late Gothic, the plan of the church being cruciform, having chancel and transepts. The clear-story is carried upon moulded arches, supported upon octagon pillars, having moulded caps and bases, all of white Cefn stone, as are also chancel, transept, and organ-chamber arches. One main front entrance and two side entrances are provided in addition to rear entrances. The buildings are faced externally with local red sandstone, and all the internal woodwork is of pitch-pine, toned and varnished. The rostrum is constructed of selected pitch-pine. The traceried windows are filled in with enriched lead-lights. A tower with spire occupies the south-west angle of the main building, and rises to an altitude of over 120 ft. The Sunday school buildings consist of an assembly-hall, capable of accommodating over 300 children, and having in conjunction therewith four class-rooms, each for about eighteen scholars. There is also a swimming-bath, 50 ft. in length and 23 ft. wide, having the sides lined with white enamelled bricks, and the bottom laid with heavy white tiles, on a concrete bed. There are also a gymnasium, club-house, and cocoa-rooms, with two large reading-rooms on the first floor, and a residence for manager, accommodation for bicyclists, &c. The contractors for the engineering work to the swimming-bath, and for the heating, are Messrs. Bradford, of Salford; for the wrought-iron art work, Messrs. Hardman & Powell, of Birmingham; gates and railings, &c., Messrs. M'Farlane, of Glasgow. The cost of these buildings is over 10,000*l*.

Baths, Bevington Bush, Liverpool.—The old public baths building, in Paul-street, Bevington Bush, is being gutted, and new floors, partitions, and roof provided, and also extensive additions are being built, in order to convert the old baths into a steam laundry and home for women. The plans of the architects, Messrs. Ware & Rathbone, of Liverpool, have been approved of, and the contract is being undertaken by Mr. G. C. Beecham, Paradise-street, Liverpool. The total cost will be 7,000*l*.

SANITARY AND ENGINEERING NEWS.

Oldbury Sewage Purification Works.—The Oldbury Local Board some time since invited applications from engineering experts with regard to laying down an improved system of sewage disposal at their outfall works. The population of Oldbury is about 20,500, and the average daily flow of sewage is computed at half-a-million gallons. Three engineers were selected to submit schemes to be sent in under motto. At the last meeting of the Local Board the Highway Committee presented a report recommending the Board to accept plans and schemes marked "Forward," that the plans marked "A1, A2, and A3," be given the second premium, and those marked "Practical" receive the third premium. The report was unanimously adopted. The author of the selected scheme is Mr. H. Bertram Nichols, C.E., of Grosvenor Chambers, Corporation-street, Birmingham. The system proposed for the treatment of the sewage is that known as the International process. The existing works and land will be utilised as far as possible, and the present tanks will be modified in construction to adapt them to the new system. The sludge will be pressed into cakes, machinery for that purpose being provided in the scheme. The cost of the engineering work is estimated at about 6,000*l*.

Birmingham Water Supply.—A special meeting of the Birmingham City Council was held on Tuesday, under the presidency of the Mayor, to consider the draft of a Bill empowering the Corporation to obtain a supply of water from the rivers Elan and Claerwen, in Wales. Sir Thomas Martineau, in proposing the approval of the Bill, explained that authorisation was given for borrowing 6,600,000*l*. This amount was necessary in order to meet the requirements of the next fifty years. The first instalment of works was estimated to cost 3,340,000*l*. The committee considered it desirable to become the owners of the water-shed itself in order to prevent future pollution. Councillor Jarvis pointed out that the estimates had been increased a million since the scheme was last before the Council. The Bill was approved, and it was decided to call a town's meeting to obtain the sanction of the ratepayers. It was stated that the Committee had received valuable assistance from the Town Clerks of Manchester and Liverpool, who were successfully carrying forward similar gigantic water schemes.

Lichfield Sewerage.—Major-General Phipps-Carey, R.E., an inspector of the Local Government Board, held an inquiry at Lichfield on the 20th inst. in reference to an application by the City Council to raise the sum of 2,500*l*. upon loan for the purposes of sewerage and sewage disposal. Mr. C. J. Corrie, City Surveyor, explained the proposed works, which have been rendered necessary by recent law-suits at the instance of the Earl of Lichfield, who holds an injunction against the Corporation for pollution of the brook which runs through his property. There was no opposition to the scheme, which, it is understood, will be favourably reported upon.

Basford Union Workhouse Hospitals.—The heating of these hospitals has been improved by the adoption of Shorland's Manchester Grates, and the lighting by means of Wenham Lights, with pipe-flues utilised in extracting the vitiated air. The lighting and ventilation, together with the refitting of the lavatories and baths with modern and approved fittings, have been carried out by Messrs. Humphrey & Co., of Nottingham, under the direction of the architect, Mr. Herbert Walker, also of Nottingham.

Restoration of Crowland Abbey.—According to the *Leeds Mercury*, the restoration works at Crowland Abbey, Lincolnshire, which were suspended some time ago for want of funds, are again in active progress. Two of the arches which carry the steeple were in a most dangerous condition; but these are now being made safe, and the bell-chamber will be sufficiently strengthened as to admit of the old peal of bells being rung again at Christmas. The work of restoration was begun three years ago, and, although much has been done, there is still a great deal more required.

FOREIGN AND COLONIAL.

FRANCE.—The eminent painter Delaunay has left to the Gobelins Museum a splendid Persian carpet, sixteenth century, and to the Luxembourg a portrait of his mother, one of his finest works.——The Union Centrale des Arts Décoratifs has just opened, in the Place des Vosges, the exhibition of the competition designs for its two competitions for "le mobilier d'une salle-à-manger," and for an "appareil d'éclairage électrique."——The Municipal Council of Paris has demanded the demolition of the expiatory chapel built on the site of the ancient Cemetery de la Madeleine, where were interred the decapitated bodies of Louis XVI. and Marie Antoinette.——The Conseil-Général of the Seine has voted the enlargement of the Pont de Neuilly, built by Perronet in 1772, and which was the first bridge built in France with a level roadway.——The Guimet Museum has received a number of curious manuscripts and wooden sculptures from Cambodia.——A committee has been formed at Lyons to raise a monument to Edouard Thiers, a recently-deceased deputy of the Rhone, who in 1870 distinguished himself in the defence of the Fort of Bellevue at Belfort.——A Committee has been formed at Nantes to raise a monument to Delaunay. It will probably be placed in the Museum, which contains many of Delaunay's paintings.——It is stated that the Comte de Paris intends to found a free school of agriculture in the fine Château of Bories, which has been left to him by the Marquis of Saint-Astier.——The Minister of Fine Arts has decided to restore to the town of Dijon the picture of the "Descent from the Cross," by Ribera, which had been lent to the Ecole des Beaux-Arts. It is also proposed to offer to the Musée Rude, in the same town, a cast of the celebrated bas-relief of the Arc de l'Etoile, the "Chant du Départ."——There has been inaugurated in the Cathedral of St. André, at Bordeaux, a monument to the memory of the Cardinal-Archbishop Donnet. It is the work of the late eminent sculptor Delaplanche, and was in the 1890 Salon.——Last year some archæologists of the Department de la Manche discovered, in the interior of the Romanesque apse of the church of Savigny, a set of mural paintings of the twelfth century representing the life of Ste. Barbe. It was decided to restore these paintings, and the artist charged with the work has recently announced that he has discovered in the nave of the same church some further paintings of the same date. The plaster having been removed here with great care, the paintings have been found to be very interesting and in a remarkably good state of preservation.——The artists of Marseilles have just opened their annual exhibition. A well-arranged temporary building has been erected in a garden-square of the city.——M. Dutert, the architect of the Palais des Machines, has been commissioned by the Municipality to prepare a design for a commemorative monument of the battle of Wattignies. The sculptor will be M. Fagel.

BERLIN.—The Imperial Reichstag will during the present winter session be asked by the Government to vote the sum of 4,500*l.* to cover the expenses necessary for a suitable decoration and arrangement of the halls intended to hold the "German Division" at the Chicago World's Show in 1893. Herr Wermuth, who is to act as Germany's Special Commissioner at Chicago for the time of the Exhibition, has returned from a preliminary trip to America. Besides making his report to the Government on the prospects of the Exhibition, he has lectured on the subject before several public bodies.——Although no official note on the matter has as yet been issued as to the "Verein Berliner Kuenstler" having the management of the annual "Salons" and larger art exhibitions given them in lieu of the Academy of Arts, it is generally believed that their petition to the Emperor on the subject will not be granted at present, but left under consideration until next year's annual Salon has been arranged on the old lines. An inquiry on the results obtained will then be held and comparisons made. As Munich will next year hold a so-called "international" exhibition, and intends taking much trouble with its arrangement, the Berlin Salon, managed in a half-hearted way, is pretty likely to be a failure.——The post of the chief officer of the Prussian Board of Works, which became vacant on the death of Herr "Oberbaudirector" Endell some nine months back, is to be taken by Herr Spiecker, a very popular Government building official, who is also known to take some interest in the artistic side of his profession.——The two schemes for new metropolitan electric railroad connexions in the city, one an overhead one, the other underground, both seem to have met with the approval of the Government and Municipal authorities before whom they have lately been placed. The originators have had their designs returned to them for some alterations in minor purport; they will then be put before some special committees.——The Amalgamated Societies of Architects and Civil Engineers intend publishing some tables on the durability of the different free stones and granites used for building purposes in Germany. This publication will be edited by Herr Professor Koch, of the Technical College at Berlin.——In connexion with the biennial meeting of architects and civil engineers to be held next year at Leipsic, the new monument in memory of the architect, Semper, will be unveiled at Dresden, to which city an excursion is to be made.

ROUMANIA.—The Municipal authorities of Jassi offer two prizes of 7,000 fr. and 3,000 fr. for the best design of a city slaughter-house, to be erected at a cost of 1,000,000 fr. Architects of any nationality can submit designs; sending-in day is March 15, 1892. Programme of requirements and plan of site can be had from the Town Clerk.

SWEDEN.—A serious crisis has arisen in the Stockholm building trade, caused by over-building, and most work has been stopped. As an example may be mentioned that during last quarter the City Building Board received only three applications for the erection of new dwelling-houses, and only six applications for builders' licences, two being from old-established builders, who in future require such, according to the new regulations. In Malmö, too, similar stringent building regulations have been adopted, no one not holding a certificate of competency from some acknowledged technical institute being permitted to undertake the building of houses having more than one story. Several old-established builders, being unable to furnish such, have been refused a licence by the City Building Board, and the decisions, on appeals being made to the Crown, have been confirmed.

NORWAY.—Fifteen designs have been received for the new Museum of Arts, to be built in Bergen, most of the competitors being Norwegian architects resident abroad. *A propos* of this competition, the *Teknisk Ugeblad*, the leading Norwegian architectural organ, stigmatises it as a "Competition Scandal," and severely censures the committee charged with the matter. The journal states that in the middle of the time allowed for the competition the committee altered the original programme very seriously, with great loss of time and labour to many architects, and that, moreover, the two architects named on the committee have refused to serve, leaving an engineer and two merchants to decide the matter. The Association of Architects and Engineers at first protested against this proportion, demanding a majority of professional men on the committee. Now, however, *one* other architect has been induced to serve. The *Ugeblad* expresses the hope that there is but *one* architect in Norway who would accept this task, after such shabby treatment of his *confrères*.

MISCELLANEOUS.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—At the meeting of this Association on the 18th inst., the Rev. Dr. Sparrow Simpson, Sub-Dean of St. Paul's in the chair, the Rev. C. Collier exhibited a fine bronze celt and a small spear head, found some time since at Settle. Dr. Fryer exhibited two prehistoric implements worked in hard greenstone, one a chisel of great sharpness. Both were found recently at Ontario. Dr. Fryer described a curious hunting scene which he has found roughly scratched on the plastering of one of the towers of Kidwelly Castle, evidently done when the material was in soft condition. Mr. Loftus Brock, F.S.A., described a visit paid to Stonehenge by the Rev. J. M. Bacon at midnight on the verge of the longest day to watch the rising of the sun from the altar-stone. There has been local belief for years that on this morning the sun always rose in a line with the well-known Friar's Heel. Such is found to be the case. A photograph taken by Mr. Howe, of Newbury, was exhibited, which perfectly shows the phenomenon. Mr. Thomas Blashill exhibited some Roman coins recently found at Newington, and Mr. Macmichael described a curious collection of Roman bronze personal ornaments found in various parts of London. After other exhibitions had been made, a paper was read by the Chairman on a Magic Roll in the British Museum. This is a MS. of which two other copies, with various readings, are known to exist. It consists of a curious medley of symbols, mostly of our Lord's Passion, and of charms of magic use, among the most remarkable of which is a drawing of the Cross of Calvary, on the stem of which are five tau crosses indicative of the five wounds. The cross is 4 in. in length, which, if enlarged fifteen times, is to give the exact height of our Lord's Cross. In this case the MS. does not agree as to the height with the other MSS. An Indulgence for the worship of the wounds is given, and there is a hymn in English. The Rev. Mr. Lach-Szyrma spoke of the continued existence of some of the curious practices described by the lecturer. The second paper was on the Abbots of Boxley, Kent, by the Rev. Cave Browne. The names of but very few of these have hitherto been recorded; but the lecturer has succeeded, by means of references in old Kentish MSS., in recovering a goodly number.

"ADAMANT" STONE.—On the 20th inst. we had the opportunity of witnessing, at Victoria Wharf, Greenwich, a new process of manufacturing artificial stone capable of use for street paving, or as cills, lintels, stringcourses, steps, landings, &c. The new stone is called "Adamant" stone, and is composed entirely of fine-broken granite chippings and Portland cement. It does not, in fact, differ as to materials from other artificial stones, but it is in the process of manufacture that it differs most from other artificial stones now in the market. Such stones have hitherto been made by mixing, in certain proportions, broken granite or other stone or materials with Portland cement and water, after which the slab or block is placed in a solution of silicate of soda,—this process taking from the time of first mixing until the stone is ready for use, some months. This method does not, it is urged, produce a dense or satisfactory form of stone or concrete,—air cavities exist throughout the whole mass, and the action of the silicate of soda is uncertain. Moreover, it only permeates the stone to a small extent. The method adopted by the Patent Adament Stone Company is, however, purely mechanical. The materials when mixed are placed in a specially prepared mould and subjected to great hydraulic pressure. The result is the production of a dense non-porous stone free from air cavities, consequently proof against the action of frost, and so nearly resembling natural stone in appearance as to be easily mistaken for it. Some tests which we witnessed of specimens of the "Adamant" stone showed that it is capable of bearing a crushing strain twice as great as that of ordinary silicate stone.

CHICAGO EXHIBITION, 1893.—It is announced in our advertisement columns that the Royal Commission for this Exhibition are now prepared to receive applications for space in the British Section. Such applications are to be made upon forms which may be obtained at the offices of the Society of Arts, London, where also information may be procured as to the condition of the Exhibition, the charges to be paid for space, &c.

VICTORIAN INSTITUTE OF ARCHITECTS.—We may draw the attention of manufacturers to an advertisement from the secretaries of this Institute, whose headquarters are in Melbourne (Australia), asking for price-lists, &c., of building materials and other requisites in connexion with building, for filing.

THE LATE NAVAL EXHIBITION.—As will be seen by an advertisement which appears in our pages this week, Messrs. Horne, Son, & Eversfield announce the sale, on December 9 and following days, of the buildings and effects of the Royal Naval Exhibition. The sale will include the Eddystone lighthouse, the full-size model of H.M.S. *Victory*, and other attractions of the exhibition.

THE LONDON TIMBER TRADE.—The Timber Trades section of the London Chamber of Commerce have decided to call periodical meetings of the whole section in place of committee meetings merely, sub-committees to be appointed from time to time to deal with specific questions as they arise. It is thought that a greater interest in the proceedings will be awakened by this course.—*Timber*.

THE SOCIETY OF ENGINEERS.—The annual dinner of this Society is fixed for Wednesday, December 16, at the Holborn Restaurant.

HIGH BUILDING STOPPED IN CHICAGO.—A Chicago telegram to Dalziel's Agency says:—The City Council, after a long discussion, have finally forbidden the further erection of buildings fifteen stories and more in height; one large structure which has already cost 500,000 dols. has been abandoned.

EMPLOYMENT OF RESERVE SOLDIERS.—We have received the sixth annual report of the National Association for the Promotion of the Employment of Reserve Soldiers on their discharge from regular service. The object is to assist these men in obtaining employment on their discharge from regular service. The report points out that the Reserve men are mostly strong and active men who have been trained to habits of regularity and discipline. The Association has found situations for 2,097 men during the past twelve months. The office of the Association is at 12, Buckingham-street, Strand.

THE ENGLISH IRON TRADE.—Quietness continues to prevail in the English iron market, but prices show but little variation. Another week has passed away without any business in Scotch warrants being reported, and there is no indication as to the duration of the present deadlock. The Cleveland pig-iron market remains dull and inactive, and there is no improvement to note in the hematite pig-iron trade of the north-west, but prices are steadily maintained. The manufactured iron trade continues fairly steady, but the steel trade generally is rather quiet. The tinplate market is still dull. Engineers are tolerably brisk, but the prospects for the future are not so encouraging. Shipbuilding yards maintain fair activity on the whole. The coal trade is somewhat slack, considering the colder weather experienced during the past week.—*Iron*.

THE REGULATION OF SLIPPERY STREETS.—Everyone acquainted with the construction of modern city roadways will appreciate the utility of a recent order issued by the Commissioner of Metropolitan Police. According to this regulation police constables will be required to notice the condition of thoroughfares within their sphere of duty, and to report to the local authority any that are dangerous to traffic from want of sand or gravel. The precaution is one of such evident value that little need be said in order to recommend it. Experience in use has taught us that asphalte, wood, and a variety of composite substances will in some respects compare favourably with the time-honoured paving-stone as means of road-making. For smoothness, quiet, even durability, there is much to be said in their favour. Their one great and common draw-

back is their treacherous uncertainty during and after wet weather, a quality which is much enhanced of course by the addition of tenacious mire well trodden and rolled by countless feet, and by constant wheel traffic. The order referred to comes as a simple and effectual remedy for this ever-present danger. To the foot-passenger no less than to the swiftly-driven cab-horse or the cycle-rider the state of the road is everything as regards security of life and limb. It is, therefore, the more satisfactory to note that local authorities on their part—if, at all events, we may take for example the Marylebone Vestry—not only do not resent, but seem desirous of utilising, the aid of this freely-offered service of inspection.—*The Lancet*.

A New Pneumatic Accumulator.—In a recent issue of *Stahl und Eisen* a new accumulator for hydraulic machinery is described and illustrated. This is the invention of Prött & Seelhoff, and acts by means of air pressure. It has been designed to overcome the danger from shocks caused by the sudden reversal of ordinary dead-weight accumulators when working at high speed. It also obviates the necessity for air vessels on the pressure mains. The accumulator consists of an air cylinder and plunger, placed above a water cylinder and plunger which are connected by a framing of three vertical columns. The area of the upper plunger is ten times that of the lower one, so that when there is a pressure of fifty atmospheres in the air vessel with the plunger at the bottom of the stroke, the pressure in the hydraulic cylinder will be 500 atmospheres (7,500 lbs. to square inch) when the plunger is lifted by water from the driving-pumps. Pressure will go on increasing from the diminution of the space for the enclosed air as the piston rises; conversely the pressure will diminish as the plunger falls, and water is drawn from the main by the machines at work. When the variation of pressure is not desired it may, in some degree, be prevented by making the body of the plunger hollow, or the working cylinder may be connected with a series of air reservoirs by a pipe passing through the top cover. In order to prevent air-leakage through the cast-steel plunger the latter is oil-jacketed. Several large accumulators on this principle have been erected on the Continent, notably at the Bochum Steel Works.

Electric Lighting in St. Pancras.—At their meeting on the 13th inst., the London County Council returned to the Finance Committee a recommendation of the latter that the Council should lend 56,300*l*. to St. Pancras Vestry for electrical supply works. That parish obtained a provisional order from the Board of Trade eight years since. Thus they were the first local authority, in London, to make an application of the kind, which in effect precludes any trading company, speculative or otherwise, from providing similar lighting in St. Pancras. The new works, which we are told have been in active operation for three weeks past, are situated behind No. 47, Stanhope-street, Euston-road, the buildings having been begun there in November last year, Professor Henry Robinson being Engineer to the Vestry. They were designed* to supply current for mechanical power and 10,000 incandescent lamps of 16-candle power each, together with arc lights for the streets. Provision was made also for an ultimate increase to 25,000 lamps. Should the enterprise prove successful the Vestry intend to establish three more central stations in this parish, which is computed to contain a population of about 245,000 persons within its area of 2,672 acres. Of late years Stanhope-street has absorbed Mary-street; It was in Mary-street, according to the "Reminiscences" that Wm. Chas. Macready was born on March 3, 1793. Hampstead-road, in part, seems to have been then known as Tottenham Court-road. Some biographers say he was born in Charles, now Drummond, street.

Band-saw Guide. — We have recently had brought before our notice a band-saw guide which promises well. As a rule, the thrust of a band-saw is taken by a solid and stationary piece of metal, and the evils of this arrangement are well known in the matter of unequal expansion. Wright's band-saw guide is designed to overcome this. The saw is prevented from moving sideways by solid guides, and the backward thrust is taken by a disc mounted on a horizontal spindle, and free to revolve. The plane of the disc is at right angles to the side surfaces of the band-saw, so that the back of the latter presses against the face of the disc. The spindle is so mounted that its axis is a short distance, horizontally, from the path of the saw, and the latter presses against the disc near the circumference. In this way the disc is caused to revolve, and for this reason the device is called the "non-friction saw guide." Of course, this claim cannot be absolutely maintained, as the line of travel of any point in the disc is in a circular course, whilst that of the saw back is in a straight line. With a given thrust on any given disc, the friction will vary with the distance from the periphery of the disc that the band-saw bisects the disc. The area of thrust surface varies according to the same conditions. Messrs. Sagar & Co., of Halifax, are the manufacturers.

* Total cost (including 5,000*l*. for future extensions; freehold site; 1,150*l*. for works at Tottenham Court-road, south end; and 500*l*. for Camden-town Sub-station) estimated at 63,000*l*.

Bells at St. Thomas's, Stourbridge.—Messrs. Carr, of Smethwick, have obtained the contract to re-hang the old peal of eight bells (tenor, 1 ton weight) at St. Thomas's Church, Stourbridge.

Removing Rust from Iron.—There are two ways (says *Iron*) in which rust may be removed from iron or steel. The first and most common practice is by the use of some abrasive material, and the process is usually termed scouring. Another method is by chemical action, by the application of some chemical applied in solution which has a high affinity for oxygen and which withdraws the oxygen, leaving the iron particles free. One of the best compounds for such purposes is given by the *Chronique Industrielle* as follows:—Potassium cyanide, 15 grammes; soft soap, 15 grammes; whiting, 30 grammes; and sufficient water to form the ingredients into a paste. This is to be applied as a scouring material and well rubbed over the rusted surface, after which it is to be thoroughly wiped off and a coating of oil applied to stop further action. The active material in this composition is the potassium cyanide, which has the strongest deoxidising property of any substance with which we are acquainted; and further, it is one of the most poisonous substances known. . . . . It is suggested that when using this compound the hand should be free from cuts of any kind.—*Iron*.

Dangerous Disused Wells.—Mr. Samuel Cridland, a builder, until lately carrying on business in South-street, Yeovil, was suddenly killed on the 11th inst. It appears, from the account in the *Western Gazette*, that an old well at the back of the police-station was in a condition which led the police to ask Mr. Cridland to look at it. Mr. Cridland at once walked towards the well, when one of the constables warned him that the ground around the top and cover-stones might be unsafe. Mr. Cridland had only taken two steps further in advance when the earth and stones gave way, and he fell down into the well. The water was but 4 ft. deep, but one or more of the stones struck him on the head, and, according to the evidence of Dr. Colmer at the inquest, there is little doubt that he was first stunned, and then drowned by the water that covered him. The coroner's jury returned a verdict in accordance with the evidence, and expressed the opinion that, where possible, every disused well should be examined and rendered safe, in order to prevent any further accidents of this nature, and that in future such wells should be filled in, and not simply covered over.

Carbon Brushes for Dynamos. — Carbon brushes for dynamos have long been proposed, and have, to some extent, been used. Their chief merit has been that they reduce the trouble arising from sparking, but the care required in their use has generally been considered to more than outbalance this advantage. Although the carbon brush lasted longer, the commutator wore out faster; and the fine carbon dust produced lodged in the commutator and armature winding, and often produced short circuiting. According to *L'Electrician*, a special description of carbon has been introduced by Messrs. Lacombe & Co., which will overcome these difficulties. Hitherto, the carbon most ready to hand has been used, namely, battery carbon or arc light carbon, which gave rise to the troubles mentioned; but the special carbon referred to appears to give very good results. M. T. A. Montpellier states that he has recently examined an Edison dynamo, which has been running with the Lacombe carbon brushes for a year. The commutator had the appearance of having been burnished, and the contact surface of the brushes was as smooth as polished ebonite. The wear was insignificant, and no carbon dust was produced.

LEGAL.

AN ARCHITECT'S CLAIM FOR PROFESSIONAL SERVICES:

ROGERS *v.* JAMES.

This action (which was before the Court of Appeal on the 19th inst., before the Master of the Rolls, Lord Justice Lopes, and Lord Justice Kay), was brought by an architect to recover 123*l*., the balance of his account for services rendered to the defendant in connexion with the erection by a builder of a house at Bromley, Kent. The defendant (we quote from the *Times* report) counterclaimed for damages for negligence, owing to the plaintiff's not properly supervising the building of the house, in consequence whereof the builder omitted to put certain concrete into the foundations and omitted to do certain other works. The plaintiff denied that he was negligent, and further stated that in giving his final certificate to the builder he deducted 82*l*. in respect of the omissions from the amount certified to be due to the builder, and contended that this certificate was binding upon the defendant under clause 16 of the contract between the defendant and the builder. Clause 16 provided that:—

"The decision of the architect with respect to the amount, state, and condition of the works actually executed, and also in respect of any and every question that may arise concerning the construction of the present contract, or the plans and specification, or the execution of the works hereby contracted for or in anywise relating thereto, shall be final and without appeal"

The action was tried before Mr. Justice Mathew and a special jury at Maidstone, where the jury found that the plaintiff had been guilty of negligence, and found a verdict for the plaintiff on the claim for 58*l*. and for the defendant on the counterclaim for 90*l*. The learned Judge gave judgment accordingly. The plaintiff now moved for judgment on the counterclaim or for a new trial.

Mr. Willis, Q.C., and Mr. Cecil Chapman appeared for the plaintiff, and contended that the certificate of the plaintiff was binding upon the defendant, and the deduction of 82*l*. from the sum payable to the builder was conclusive as between the plaintiff and the defendant. They also contended that the verdict was against the weight of the evidence.

Mr. Channell, Q.C., and Mr. H. F. Dickens, for the defendant, were not called upon.

The Court dismissed the motion.

The Master of the Rolls said that, the jury having found negligence in the plaintiff, the only material question arose upon the counterclaim. It was contended that the certificate which the architect gave under clause 16 of the contract was a final settlement of the amount of damages, and could not be questioned by the defendant. It was said that the certificate was final as between the building owner and the architect. That was not the law. The certificate was final as between the building owner and the builder. Any question as between the building owner and the architect would not be decided by that certificate. As between the building owner and the builder, the architect had, in the honest exercise of his judgment, awarded a sum which the building owner could not question. As against the architect, the building owner could question that. The jury had found that the architect was negligent, and that the architect had not awarded sufficient. The learned Judge was satisfied with the verdict, and a new trial could not be granted. Whether the Court would have arrived at the same verdict was not now the question.

Lord Justice Lopes concurred. The architect must not act negligently. Clause 16 of the contract gave the architect no jurisdiction to decide any question of negligence as between himself and the building owner, and the building owner could bring an action of negligence against the architect. The jury found that the 82*l*. allowed by the architect was not sufficient, and they awarded the building owner a further sum from the architect. The judge was satisfied with the verdict, and that Court could not disturb it.

Lord Justice Kay concurred.

THE LONDON SCHOOL BOARD AND ITS BUILDERS:

THE SCHOOL BOARD FOR LONDON *v.* JOHNSON.

This case, which came before Mr. Justice Denman on the 21st inst., in the Queen's Bench Division, had been before the Court on previous occasions. The defendant was a builder, who had done work for the London School Board upon three contracts in reference to as many schools, and the present action was brought against him to recover sums amounting to 3,670*l*. in all, in respect of default in connexion with the performance of these contracts. The action came on for trial before his lordship in May last, when, after some discussion, it was arranged that the dispute should be referred to an arbitrator to be named by him, and who should report to him. He named Mr. Henry A. Hunt, a surveyor, who, after having held sittings, which extended over twenty-four days, made his report, and the matter came on for argument before his lordship early in the present sittings. Upon that occasion it was suggested for the plaintiffs that his lordship should have further communication with Mr. Hunt, and should postpone judgment until this had been done.

Mr. Justice Denman said that the plaintiffs sued the defendant to recover a large sum of money in respect of work done, or omitted to be done, by him some years before the action was brought upon three contracts in reference to three Board schools. The defendant had been paid upon the Architect's certificate, but it was contended that the School Board were entitled to have damages, notwithstanding the lapse of time that had taken place, and the fact that the Architect's certificate had been given. His lordship went through the conditions, which provided, among other things, that the contracts should be executed with the best materials and with skilful workmanship, and to the satisfaction of the Architect. Further, that if within four months of the completion of the works any defect arising from improper material or workmanship should be found, the contractor should make it good at his own cost. The certificate of the Architect, showing the final balance due to the contractor, should be conclusive evidence that the work had been completed, and that the balance was payable; but without prejudice to the contractor being liable in a certain event. Then came clause 22, which provided that no final or any other certificate should relieve the contractor from any fraud, default, or wilful deviation from his contract; but that he should remain

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
Public Hall and Workmen's Institute, Treharris, S. Wales	W. C. Thomas	Not stated	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor or Engineer.	Tenders to be delivered.
*Oil Engines and Sewage Pumps	Reigate R.S.A.	J. Anstie	Nov. 30
Schoolhouse and Offices, Guilwyn	Dylais Higher Sch. Bd		Dec. 1
Infant School, Southmoor, near Chesterle-Street		J. W. Rounthwaite	do.
*Making-up and Paving Roads	Fulham Vestry	W. Sykes	Dec. 2
*Roadmaking and Paving Works	Hammersmith Vestry	H. Mair	do.
Steel Rails	G. W. R. Co.	*Official*	do.
Long Fence Wall, Holmfield	Ovenden Local Board	do.	Dec. 3
Shop, Corn Market, Halifax		W. H. D. Horsfall	Dec. 4
*Escape Staircases, Plashet Schools	St. George-in-the-East Guardians	Wilson, Son, & Aldwinckle	do.
*Hot-water Heating	Downpatrick Asylum	P. C. Cowan	do.
*New Sewers, Roads, &c.	Hythe Town Council	Ernest S. Wilks	Dec. 5
*Supply of Stores for 12 months	G. N. R. Co.	*Official*	do.
New School, Brithdir	Geiligaer School Board	J. Williams	Dec. 7
Laundry and Cookery Rooms, Prior-street School	Gateshead School Bd.	*Official*	do.
Bank Premises, Shop, and House, Halifax	Lanc. & Yorks. Bank, Lim.	Utley & Gray	do.
*Construction of Stalls and Engine Room	Bilston Township Com.	C. L. N. Wilson	do.
*Lowering Present Headings in Wells	East Grinstead Gas & Water Co.	E. Easton & Co.	Dec. 9
Retort House, Birkshall Gasworks	Bradford Corporation	Mr. Wood	do.
Service Reservoir	Northallerton Loc. Bd	A. M. Fowler	do.
*New Staircases, &c. at Union Workhouse	Poplar Union	—Clarkson	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Alterations and Additions, Stockwell-rd.	Lambeth Guardians	*Official*	Dec. 9
*Engine and Boiler House, &c.	Rochester Corp.	do,	Dec. 10
*Temporary Wooden Building, Exeter	The Committee	Jas. Jerman	do.
Enlargement of Service Reservoir, Moortown	Leeds Corporation	T. Hewson	do.
New Infirmary, Sunderland	Sunderland and North Durham Eye Infirmary	J. W. Donald	Dec. 12
*Cast-iron Mains for Water, Melbourne, Derbyshire	Shardlow U.R.S.A.	G. Hodson	do.
Service Reservoir	Alnwick U.R.S.A.	M. T. Wilson	Dec. 14
*Reservoirs, Catchwaters, &c.	Wakefield Corp.	H. Refe	do.
*Block 1 Admiralty Buildings	H. M. Works	*Official*	Dec. 15
Schools, Ouseburn	Newcastle Sch. Bd.	F. W. Rich	Dec. 16
*Works and Materials	Parish of St. George, Hanover-square	G. Livingstone	Dec. 19
Hermitage, Welcombe, N. Devon	Rev. — Bromley	J. Yeardye	Dec. 21
*Lighting Pier, &c by Electricity	Bournemouth T. C.	F. W. Lacey	Dec. 24
*Oak-work Galleries, Fittings, &c. of Library	University College, Aberystwith	C. J. Ferguson	No date
Warehouse, Frederick-street, Cardiff	Jones, Dickinson & Co.	Seddon & Carter	do.
Road Work, High Harrogate	E. Bamford	H. E. & A. Bown	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Inspector to Examine House Fittings and Drains	Croydon Council	2*l.* 2s. per week	Dec. 2
*Sanitary Inspector	St. Olave's B. of W.	160*l.*	Dec. 7
*Sanitary Inspector	Wandsworth B. of W.	2*l.* 5s.	do.
*Road Foreman	do.	2*l.* 2s.	do.

Those marked with an Asterisk (*) are advertised in this Number. *Contracts, pp.* iv., vi., *and* viii. *Public Appointments, p.* xviii.

for four years liable for such acts. The plaintiffs alleged that there had been fraud, default, or deviation from the contract, and that by reason of this they had suffered loss and damage. When the case came on for trial he (Mr. Justice Denman) expressed the opinion that to entitle the plaintiffs to recover they must show that there had been something in the nature of "scamping" work; and it was arranged that upon the report of the arbitrator, he should direct judgment, from which judgment there should be no appeal. The arbitrator was to report whether the defendant had been guilty of fraud, default, or wilful deviation from his contract; whether there had been "scamping" of the work with a view to his own interest; or wilful deviation from the contract with the same view. Since the case was last before the Court, his Lordship said that he had seen Mr. Hunt, and had also carefully gone through the shorthand-writers' notes of the proceedings before him, and he had no doubt of the correctness of the conclusions at which that gentleman had arrived. He had found that the defendant was not personally guilty of fraud, but that to a certain extent a plumber was guilty in laying light lead in the gutters to the extent of 7 cwt., and of the value of 5*l.* 5s. He reported that, generally, the work had been well done—notably, the lead work, the joiners' work, the plasterers' work, and the brick and stone work; and that, although there were serious failures in the drainage work of at least one school, he did not consider that the work, as a whole, had been scamped. He then referred to various deviations from the contract that had taken place under certain circumstances; and, in conclusion, he remarked that the defects that had manifested themselves in the buildings could not have existed without the contributory negligence of the School Board and its agents. His Lordship said that, even assuming that there was some blame to the defendant's foreman in reference to work done and to deviation from the contracts in reference to the drains, he thought that Mr. Hunt was right in saying that it was not intended to put money into the defendant's pocket, but was due rather to the loose surveillance of the foremen and clerks of the works. Upon the whole he (Mr. Justice Denman) had no hesitation in giving judgment for the defendant, with costs.

Mr. Reid asked for costs upon the higher scale.

Mr. Justice Denman thought that should be so; and in answer to a further application, he gave the defendant the costs of two interlocutory applications that had been made.

Judgment for the defendant.

APPRENTICES AND THE EMPLOYERS' AND WORKMEN'S ACT:

HEMS *v.* BLACKER.

AT the Exeter Police-court, on Monday last, before the Mayor and other justices, an apprentice named James Henry Blacker was summoned by Mr. Harry Hems, architectural sculptor, under the Employers' and Workmen's Act, to show cause why he should not perform his duties under a deed of apprenticeship dated December 14, 1887.

Mr. Beal, who appeared for the plaintiff, said he claimed, under the civil jurisdiction of the court, that an order should be made upon the defendant directing him to return to his duties as an apprentice. Hr. Hems was a large employer of labour, and kept a staff of over sixty, including nine or ten apprentices. Therefore, it was necessary that proper discipline should be observed in his establishment. He regretted very much that he had to come there that day. He had had the good fortune, although so many apprentices and workmen had passed through his shop, to go on for a period of fourteen years without having occasion to take proceedings such as the present.

The Mayor, on the deed of apprenticeship being handed in, called attention to the last clause, whereby the defendant had paid to the plaintiff 50*l.* as a premium. The magistrates had no jurisdiction over a civil case involving a larger sum than 25*l.*

Mr. Rutter, on behalf of the defendant, made an application for costs. The Mayor said that, as they had no jurisdiction in the case, the Bench could not grant costs.

CAPITAL AND LABOUR.

THE RECENT STRIKE OF LONDON CARPENTERS AND JOINERS.—According to the *Daily News* of Tuesday last, a specially summoned "shop-and-job" delegate meeting of carpenters and joiners was held on Monday night at the Old Friends' Hall, St. Martin's-lane, to consider the award of the arbitrator, Mr. J. Macvicar Anderson (President of the Royal Institute of British Architects), relating to the dispute. (We gave the terms of the award in the *Builder* for last week, pp. 383-384.) Mr. J. G. Bowern presided, and said that nothing but disappointment had been felt at the award, but the United Trade Committee were in honour bound to abide by the decision. He recommended combined organisation so that the carpenters and joiners might at no distant date obtain considerable improvement in their position.—On the motion of Mr. George Dew (secretary of the United Building Trades Committee), seconded by Mr. George Hillier (executive committee), the following resolution was, after discussion, carried with three dissentients:—

"That this shop and job delegate meeting, whilst expressing its disappointment with the arbitrator's award, as a whole, welcomes the reduction of hours, the extra tax on overtime, and the allowance for expenses as substantial advantages gained, and is of opinion that the present organisation of the trade should be maintained in order to be ready for any contingencies that may arise through the action of the other sections of the building trade."

The *Times* of Wednesday reports that at a special meeting of the London Building Trade Committee, held on Tuesday night at the Operative Bricklayers'-hall, Southwark-bridge-road, it was resolved:—

"That the London Building Trade Committee desire to express their disapproval of the award given by the arbitrator in the late strike and lock-out of carpenters and joiners, and hereby call upon all branches of the building trade to strengthen their various organisations, and to closely federate together with a view to obtain more reasonable terms at an early date; and that a copy of this resolution be forwarded to the various societies represented on this Committee."

Mr. Rogers (Painters' Society) thought a suggestion should be thrown out by the Committee that all branches of the trade should form a federation whereby they would be in a position to turn out in the spring in the event of the employers refusing the demand for a forty-seven hours week and 10d. per hour. The award, he said, was an outrage on common-sense and a deliberate insult to the intelligence of the workmen connected with the building trade in London.

MEETINGS.

MONDAY, NOVEMBER 30.

Royal Institute of British Architects.—Papers on "Sculpture and Sculptors' Methods in Relation to Architecture," by Messrs. John Belcher, W. S. Frith, and Thomas Stirling Lee. 8 p.m.

Society of Arts (Cantor Lectures).—Mr. A. P. Laurie, M.A., on "The Pigments and Vehicles of the Old Masters." I. 8 p.m.

TUESDAY, DECEMBER 1.

Institution of Civil Engineers.—Further discussion on the following papers:—(1) "Portland Cement: its Manufacture, Use, and Testing," by Mr H. K. Bamber. (2) "The Inspection of Portland Cement for Public Works," by Mr. A. E. Carey. (3) "The Influence of Sea-Water upon Portland Cement, Mortar, and Concrete," by Mr. William Smith. 8 p.m.

Glasgow Architectural Association.—Mr. Andrew Muirhead on the "Antiquities of Renfrewshire." 8 p.m.

WEDNESDAY, DECEMBER 2.

British Archæological Association.—(1) Mr. W. F. Reid on "A Pre-historic Bronze Foundry, St. Columb, Porth." (2) Paper by Mr. J. H. Macmichael. 8 p.m.

Society of Arts.—Mr. G. H. Robertson on "Secondary Batteries." 8 p.m.

London Society for the Extension of University Teaching (Chelsea Centre).—Mr. A. H. Fison, D.Sc., on "Electricity and its Modern Applications." IX. 8.15 p.m.

THURSDAY, DECEMBER 3.

Society of Antiquaries.—8.30 p.m.

Royal Archæological Institute.—Mr. Arthur Vicars, F.S.A., on "An Illuminated Pedigree of the Peverell Family." 4 p.m.

FRIDAY, DECEMBER 4.

Institution of Civil Engineers.—Students' Visit to inspect the new Refrigerating Plant, at Nelson's Wharf, Commercial-road, Lambeth. 2 p.m.

London Society for the Extension of University Teaching (Hampton Court Centre).—Mr. Locke Worthington on "Architecture." V. 2.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

18,833.—HOUSE BUILDING: *R. McAlpine.*—To form a granolithic face on a wall built of rubble, brick, or concrete, the wall is, according to this patent, built up, the window-frames and door-frames put in, and then a casing is formed on the outside of the wall, and the space between this casing and the wall is filled up with liquid granolithic, which seals up the rough building, and leaves a perfectly smooth face on the outside. In ornamental work, the casing is shaped accordingly.

18,982.—TILES, BLOCKS, &c.: *H. L. Doulton and Another.*—This method for producing tiles with undercut grooves, presses the clay into a mould; then, while the clay is still in the mould, supported by the sides thereof, the draw-plate is pulled out from the mould, so that the dovetail projections leave the clay endwise.

19,712.—ROOFING: *J. P. Bayly.*—The object of the invention is to provide a roofing which will better withstand the elements, and which will be warmer and more lasting than ordinary felt or other roofing. This is done by providing a layer of wool felt, upon which is placed a layer of flax felt. Cement is put between these layers of felt, and a top layer of woollen felt finishes off the roofing.

20,814.—CHIMNEY-POTS: *T. E. Clarke.*—This specification sets out the combination with a chimney-pot proper or tube of a cylinder of larger diameter and a disc of the same diameter as the pot, arranged and supported so as to maintain a constant position concentric with the cylinder, but also capable of vertical movement.

10,057.—SYPHON CISTERNS: *W. Stock.*—The improvements detailed in this specification refer chiefly to the shape of the dome and base-plate, and a general arrangement of the parts for effectually flushing and cleansing.

15,638. — METAL LATHING: *W. W. Bostwick.* — According to this invention the metal is perforated with a series of pairs of parallel slits, arranged at suitable intervals, with the body of the metal between each pair drawn forward to form loops. This is designed to save as much as possible the mortar, and to provide a good bonding hold.

NEW APPLICATIONS FOR LETTERS PATENT.

November 9.—19,386, D. Campbell, Cast-metal Receptacles for Tiles.—19,363, G. Brebber, Sash-fasteners.—19,372 H. Dunsford, Windows.—19,374, T. Utley. Ships' Ventilators.—19,383, A. Lamplough, Sash-fastener.

November 10.—19,437, T. Hopkins, Wood-planing Appliance for Converting a Saw-bench into a Planing-machine.—19,439, J. Bott, Self-locking Bolts.—19,441, W. Pilkington, Forming Molten Glass into Sheets.—19,443, J. Bishop, Ventilation of Dwelling-houses and other Buildings.—19,461, W. Morison, Sliding Hinges or Catches.—19,467, J. Bloomfield, Plaster.—19 476. T. Smith, Hinged and Jointed Sash-weights.—19,488, T. Coulthard and R. Cottam, Door Bolts, having a Combined Night Latch and Bolt.—19,493, F. Bates, Ratchet Tools.

November 11.—19,511, T. Main, Greenhouses and similar Horticultural Buildings.—19,518, W. Kennett, Syphon Water-waste Preventive Cistern.—19,521, T. Fawcett, Machinery for Making and Pressing Bricks, &c.—19,534, W. Briggs, Concrete Paving or Flooring.—19,540, D. Ogilvy, Ventilating Apparatus.—19,545, E. Gardner, White Lead.—19,559, H. Schneewind, Door-closing Mechanism.

November 12.—19,585, H. Brookfield, Flushing Water-closets, &c., at Stated Periods.—19,606, J. Quarmby, Ventilating and Warming.

November 13.—19,652, S. Johnson, Flushing Water-closets.—19,664, J. Stevens and C. Major, Door-springs and Checks.—19,684, A. Berry, Arresting the Motion of and Holding Open Doors.—19,608, A. Bond, Ventilator.

November 14.—19,740, G. Jackson, Constructing Concrete Buildings.—19,757, O. Wright and R. Warren, Fireplaces or Grates.—19,769, F. Martin, Door Furniture.—19,776, J. Fairfax, Doors and Windows.

PROVISIONAL SPECIFICATIONS ACCEPTED.

16,893, T. Rockcliffe, Window-fastenings.—17,025, T. Ledward, Bench or other Vices.—17,431, J. & J. Platts, Hinge.—17,802, W. Wooler, Interlocking Roofing Tiles, having the appearance of Flat Tiles.—17,820, J. Purdon, Wood Screws.—17,883, W. Morton, Nails, &c.—17,919, F. Smith, Stair-tread.—17,943, A. Chadbourne, Water-closets, &c.—18,047, J. Dean and G. Smith, Water-closets.—18,173, S. Hellyer, Water-closets, &c.—18,247, W. Thompson, Nail-driving Tool.—18,559, T. Arnold, Utilisation of Slag for the Manufacture of Blocks, &c.—18,708, J. Vicars and others, Bakers' Ovens.—18,735, F. Moore, Paint-burner.—18,766, C. Chapman, Paving Roads, &c.—18,808, J. Ireland, Sea, River, or other Retaining Walls, &c.—18,024, A. Lutschaning, Ornamental Bricks, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

596, G. Wright, Fireplaces, &c.—684, W. Astrop and F. Parker, Carbonate of Lead, or White Lead.—757, A. Carus, Disinfecting Water-closets.—13,683, G. Williams and F. Berlyn, Producing Building Decorations and Ornamental Letters.—16,024, E. Schuster, Water-closet.—16,613, W. Eckstein and W. S. Willmore, Partitions for Stables, &c.—17,238, B. Baker, Door-fasteners.—17,466, T. Lee, Fireproof and Roofs.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

NOVEMBER 16.—By *E. J. Gairdner*: F.g.r. of 44*l.* 10s., with reversion in 64 yrs., Norwood, 960*l.*; "The Holly Tree" beerhouse and cottage, near to Bushey, c. 65*l.*; Four copyhold cottages adjoining, r. 35*l.* 10s., 180*l.*—By *Wagstaff & Warman*: 38, Lonsdale-sq., Barnsbury, u.t. 18 yrs., g.r. 10*l.*, 275*l.*; 22 to 28 (even), Hinton-st., Brixton, f., 1,950*l.*—By *C. W. Davies*: 6 & 7, Parkfield-st., Islington, u.t. 13 yrs., g.r. 11*l.* 2s. 6d., r. 66*l.*, 235*l.*; 6 to 12 (even), Beechholm-road, Clapton, u.t. 78 yrs., g.r. 25*l.* 4s., r. 104*l.*, 700*l.*—By *Protheroe & Morris*: 5, Catherine-st., Strand, f.r. 128*l.*, 2,025*l.*

NOVEMBER 17.—By *J. Fitzgerald*: 19, Vicarage Villas, Neasden, u.t. 90 yrs., g.r. 5*l.*, r. 28*l.*, 285*l.*—By *Debenham, Tewson, & Co.*: No. 11, Portland-pl., f.g.r. of 1,400*l.*, with reversion in 89 yrs., 35,000*l.*—By *E. F. Taylor*: 30 to36 (even), Thorparch-rd., Wandsworth-rd., u.t. 93 yrs., g.r. 32*l.*, 835*l.*—By *E. & H. Lumley*: Dedham Grove, and 29a. 0r. 31p., f., Ardleigh, Essex, 4,000*l.*—By *W. Hall*: 56, 57, and 58, Wych-st., Strand, f., r. 200*l.*, 3,500*l.*; 183, Grove-lane, Camberwell, f., r. 34*l.*, 305*l.*; 25, Bromar-rd., u.t. 85 yrs., g.r. 6*l.*, r. 30*l.*, 220*l.*; 151, Albion-rd., Stoke Newington, f., 1,310*l.*; 26 and 27, Newington-green, f., r. 90*l.*, 1,235*l.*; "Providence Hall," f., area 4,518 ft., Islington, 700*l.*; 9 plots of freehold land, High-rd., Tottenham, 695*l.*; 3, Page-green, f., r. 40*l.*, 400*l.*; 12 to 18 (even), Sunnyside-rd., Holloway, u.t. 38 yrs., g.r. 80*l.*, 575*l.*—By *F. S. Priest* (at Harlesden): 25, 27, 29, 39, and 41, Waldo-rd., Harlesden, u.t. 95 yrs., g.r. 25*l.*, 650*l.*

NOVEMBER 18.—By *A. T. Barber*: 11, Gerrard-st., Soho, f., r. 72*l.*, 1,510*l.*; a plot of freehold land, Chale, Isle of Wight, 40*l.*; "Sefton House," f., near Slough, 720*l.*—By *D. Young*: 81, Sandmere-rd., Clapham, u.t. 83 yrs., g.r. 7*l.*, 360*l.*; 17 and 18, Smeaton-rd., Wandsworth, u.t. 74 yrs., g.r. 10*l.*, 350*l.*—By *Farebrother, Ellis, & Co.*: "Hawley Hill House," and 66a. 1r. 28p., f., Blackwater, Hants, 10,000*l.*; an enclosure of freehold land, 2 acres, 350*l.*; a plot of copyhold land, 1a. 0r. 12p., 65*l.*

NOVEMBER 19.—By *Nokes & Nokes*: 187, Caledonian-rd., Islington, u.t. 48 yrs., g.r. 25*l.*, r. 70*l.*, 500*l.*; Nos. 28, 30, and 32, Vauxhall Bridge-rd.; Nos. 153, 155, and 157, Regency-st.; and 8 and 8a, Gulston-cottages, u.t. 13 yrs., g.r 4*l.* 4s., 1,180*l.*; 50 to 54, Church-st., Minories; and 1, 2, and 3, Sheppy-yd., u.t. 9 yrs., g.r. 205*l.*, 700*l.*—By *Langlands & Sons*: 24 to 28, Warwick-st., Woolwich, f., 870*l.*; Nos. 33 to 39, Warwick-st., f., 1,360*l.*; "The Powerful" public-house, Warwick-st., f., r. 80*l.*, 1,500*l.* By *H. J. Bliss & Sons*: 90, Abingdon-rd., Earl's-ct., u.t. 70 yrs., g.r. 7*l.* 5s. 7d., r. 70*l.*, 700*l.*; 47, Balcorne-st., Hackney, f., r. 29*l.* 18s., 325*l.*—By *Newbon & Co.*: 11, Devonshire-st., Mile End, f., 420*l.*; 10, 12, and 14, Trellis-st., Bow, u.t. 81 yrs., g.r. 12*l.* 12s., r. 89*l.* 14s., 650*l.*; 81 to 87 (odd), Queen's Head-st., Islington, c., 910*l.*—By *J. A. Smith*: l.g.r. of 150*l.*, Castlenau, Barnes, u.t. 45 yrs., g.r. 7s. 6d., with reversion for 3 yrs., 3,060*l.*; 1, Castlenau-ter., u.t. 48 yrs., no g.r., r. 28*l.*, 450*l.*; 11, Church-ter., u.t. 84 yrs., g.r. 8*l.*, 350*l.*; 7, Mansion House-st., Hammersmith, u.t. 72 yrs., g.r. 4*l.*, 250*l.*; 21, Mansion House-st., f., 350*l.*—By *Walker & Runtz*: 16, 18, and 20, Camilla-rd., Bermondsey, u.t. 41 yrs., g.r. 10*l.* 10s., r. 118*l.* 16s., 950*l.*

NOVEMBER 20.—By *Messrs. Cobb*: L.g.r. of 270*l* 1s., Lee-rd., &c., u.t. 66 yrs, 5,400*l.*—By *Norton, Trist, & Gilbert*: 35, Duncan-ter., Islington, u.t. 41 yrs., g.r. 9*l.*, 510*l.*—By *G. A. Wilkinson & Son*: Nos. 3 and 4, St. Paul's Churchyard, f., r. 300*l.*, area 3,866 ft., 22,000*l.*; 3, Zetland Villas, Honor Oak, f., r. 34*l.*, 320*l.*; 4, Zetland Villas, f., r. 50*l.*, 400*l.*—By *Humbert, Son, & Flint*: St. Mark's-rd., Kennington, l.g.r. of 92*l.* 17s., u.t. 10 yrs., g.r. 55*l.*, 355*l.*—By *H. E. Trafford*: 65 and 67, Burdett-rd., Bow, u.t. 56 yrs., g.r. 9*l.* 10s., r. 87*l.*, 1,020*l.*; 69 to 75 (odd), Burdett-rd., u.t. 56 yrs., g.r. 19*l.*, 1,575*l.*—By *G. Brinsley*: 26 to 34 (even), St. Paul's-rd., Canonbury, u.t. 34 yrs., g.r. 50*l.*, r. 184*l.*, 1,300*l.*; 1 to 6, St. Paul's-yl., u.t. 34 yrs., g.r. 60*l.*, r. 229*l.*, 1,640*l.*; 9 and 11, Newington Green-rd., u.t. 34 yrs., g.r. 6*l.* 6s., r. 74*l.*, 550*l.*; 2, Northampton-pk., u.t. 35 yrs., g.r. 6*l.*, r. 60*l.*, and a l.g.r. of 13*l.*, u.t. 35 yrs., 590*l.*; "Park Cottage," St. Paul's-pl., u.t. 35 yrs., no g.r. r. 27*l.*, 255*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	9/0/0 0/0/0
Teak, E.I.	load	8/10/0 14/0/0
Sequoia, U.S.ft.cu.		2/3 3/0
Ash, Canada	load	2/5/0 4/0/0
Birch, do.		2/10/0 4/5/0
Elm, do.		3/5/0 4/15/0
Fir, Dantsic, &c.		2/0/0 3/10/0
Oak, do.		2/10/0 4/10/0
Canada		4/17/6 6/10/0
Pine, Canada red		2/10/0 3/10/0
Do, yellow		2/0/0 5/0/0
Lath, D'ntsic, fath		5/0/0 6/0/0
St. Petersburg		5/0/0 7/0/0
Deals, Finland, 2nd & 1st std	100	8/0/0 10/10/0
Do, 4th & 3rd		7/10/0 8/10/0
Do. Riga		6/10/0 8/0/0
St. Petersburg, 1st yellow		10/10/0 15/0/0
Do. 2nd yellow		8/10/0 10/0/0
Do. white		7/0/0 10/10/0
Swedish		7/10/0 15/10/0
White Sea		8/10/0 17/10/0
Canada, Pine 1st		13/0/0 25/0/0
Do. do. 2nd		9/0/0 16/10/0
Do. do, 3rd, &c.		6/10/0 10/0/0
Do. Spruce, 1st		8/10/0 10/10/0
Do. do. 3rd & 2nd		6/0/0 7/15/0
New Brunswick		5/10/0 7/10/0
Battens, all kinds		3/10/0 15/10/0
Flooring Boards, sq., 1 in. prep. 1st		0/8/0 0/14/0
Do. 2nd		0/7/6 0/11/0
Other qualities		0/5/0 0/8/0
Cedar, Cuba	ft.	/3½ /4½
Honduras, &c.		/3½ /4½
Mahogany, Cuba.		/4½ /6½
St. Domingo, cargo av		/4½ /6½
Mexican do. do		/4 /5
Tobasco do. do		/5½ /7
Honduras do.		/5½ /6½
Box, Turkey	ton	4/0/0 13/0/0
Rose, Rio		10/0/0 20/0/0
Bahia		9/0/0 18/0/0
Satin, St. Domingo	ft.	0/0/9 0/1/0

TIMBER (*continued*).		
Satin, Porto Rico	0/0/10	0/1/6
Walnut, Italian	0/0/3½	0/0/7
METALS.		
IRON—Pig, in Scotland	ton	47/6/0 48/0/0
Bar, Welsh, in London		6/0/0 6/2/6
Do. do. at works in Wales		5/10/0 5/12/6
Do. Staffordshire, in London		6/10/0 6/15/0
COPPER—British, cake and ingot		47/0/0 50/0/0
Best selected		49/0/0 51/0/0
Sheets, strong		58/10/0 59/10/0
Chili, bars		44/5/0 44/12/6
YELLOW METAL	lb.	0/0/5⅝ 0/0/5⅝
LEAD — Pig, Spanish	ton	11/15/0 0/0/0
English, com. brands		11/17/6 0/0/0
Sheet, English, 3 lbs. per sq. ft. and upwards		13/5/0 0/0/0
Pipe		13/15/0 0/0/0
ZINC — English sheet	ton	26/10/0 0/0/0
Vieille Montagne		27/0/0 0/0/0
TIN—Straits		90/15/0 91/15/0
Australian		90/15/0 91/15/0
English Ingots		94/0/0 95/0/0
OILS.		
Linseed	ton	19/7/6 19/10/0
Cocoanut, Cochin		27/0/0 0/0/0
Do. Ceylon		24/0/0 0/0/0
Palm, Lagos		23/10/0 24/0/0
Rapeseed, English pale		30/10/0 0/0/0
Do. brown		29/0/0 0/0/0
Cottonseed ref.		19/10/0 0/0/0
Oleine		0/0/0 0/0/0
Lubricating, U.S.		4/10/0 5/10/0
Do. refined		6/0/0 11/0/0
TAR—Stockholm	barrel	0/19/6 1/0/0
Archangel		0/12/6 0/0'0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

BRISTOL.—For the erection of six cottages in connexion with the Police-station, Redland, Bristol:—

Krauss, A.	£2,198	Brown, J. H.	£2,087
Stephens, Bastow, & Co.	2,199	G. Turner	1,987
E. S. Hatherley	2,196	H. A. Forse	1,960
G. Humphries	2,173	E. Walker	1,950
W. Church	2,149	H. Rossiter	1,944
W. Cowlin & Son	2,123	W. Galbraith	1,864
E. Love	2,110	T. E. Davies (accepted)	1,789

[All of Bristol.]

CAMBUSLANG (Lanark).—For the erection of a steel girder bridge over the river Clyde, near Cambuslang, with relative road approaches. Messrs. Crouch & Hogg, engineers, 175, Hope-street, Glasgow. Quantities by the engineers:—

Hanna, Donald, & Wilson.	£11,500	Michael Alexander	£10,189
R. C. Brebner	11,235	Paton & Thomson, Glasgow (accepted)	9,713
A. H. Boyle	11,113		
Alex. Findlay & Co.	10,623		

CATFORD.—For the erection of ten houses, Doggett-road, Grange Estate, Catford. Messrs. F. & W. Stocker, surveyors, 90 and 91, Queen-street, E.C.:—

Battley	£3,835 0	Dover, Wood, & Co.	£2,727 0
Scharien & Co.	3,498 0	Tattersall	2,530 0
Somerford & Son	3,395 0	Payne & Son	2,500 0
Stevens	3 375 0	Soper	2,350 0
S. Chafen	3,090 0	Frampton	2,300 0
Toms	3,026 0	Smith	2,290 0
Wilkin	2,985 0	Jones & Groves*	2,100 0
Morgan	2,960 0	White & Sons	1,783 0
Wyatt & Winn	2,830 10	Hocknell (late)	2,130 0
Bryan & Son	2,830 0		

* Accepted.

CHADWELL HEATH (Essex).—For the erection of villa residences at Chadwell Heath, Essex, for Mr. F. Chandler. Messrs. Wigg, Oliver, & Hudson, architects, 80, Leman-street, E. No quantities:—

C. Wilson	£685	Death	£620
Barker	632	Watson	600
Dowsing & Davis	625	Barnes	585
Walter	623		

DERBY.—For rebuilding the Derbyshire Royal Infirmary. Messrs. Young & Hall, architects. Quantities by Messrs. Ruault & Young:—

Kimberley	£94,288	Higgs & Hill	£91,990
Brown & Son	93,913	Lovatt	91,788
Bowen	93,447	Neill & Son	89,830
Wood	92,250	Walker & Slater	79,715

HARLESDEN.—For the erection of six houses, for Mr. J. Riches. Mr. T. S. Stephens, architect:—

Gibbs	£2,240	Heywood*	£2,130
Nixey	2,170	Pike	2,110
Thomson	2,147		

* Accepted.

HATFIELD (Herts).—For constructing and maintaining about 3,000 yards lineal of stoneware and concrete pipe sewers, with manholes and lamp-holes, outfall works, &c., for the Rural Sanitary Authority. Mr. G. M. Lawford, engineer, 13, Victoria-street, Westminster:—

G. Double	£2,506 11 0	G. Capper	£1,988 8 6
S. & E. Bentley	2,251 0 0	W. Coker	1,906 8 10
J. Neave	2,223 0 0	C. W. Killingback & Co.	1,857 6 6
B. Cooke & Co.	2,121 0 0	S. Hipwell	1,852 0 0
J. Morton	2,100 0 0	J. Jackson	1,820 17 6
T. Bentley	2,005 0 0		

LEEDS.—Accepted at schedule of prices for the erection of three through houses on the Royal Park estate, Headingley. Messrs. Swale & Mitchell, architects, 98, Albion-street, Leeds:—

Excavators', Bricklayers', and Masons' Work—Thos. Hunnam.
Carpenter and Joiner—Wm. Wray.
Plumber and Glazier—John Watson.
Plasterer—John Dixon Dakin.
Slaters—John Atkinson & Son.
Painter—W. J. Deardeo.

[All of Leeds.]

LINGFIELD (Surrey).—For the erection of an entrance lodge and for alterations to the stable buildings, at "Rowlands," for Mr. Edward Warne. Messrs. John Colson & Son, architects, Winchester:—

Mansfield	£720 0	Dives	£610 5
Strange & Sons	680 0	F. Stevens (accepted)	570 10
Head Bros.	660 6	Wallis	495 0

[Architect's estimate, £579.]

LONDON.—For the erection of four houses, Beryl-road, Sussex House Estate, Hammersmith. Messrs. F. & W. Stocker, surveyors, 90 and 91, Queen-street, E.C.:—

Somerford & Son	£1,328	Wyatt & Winn	£1,053
T. Hussey	1,300	E. Wildman	1,050
Rooney & Jenkins	1,280	Payne & Son	1,050
Scharien & Co.	1,272	Gurr	1,050
R. Edwardes	1,255	Frampton	1,000
A. Morgan	1,238	T. J. Kinton	980
Nixey	1,234	Ferguson	897
Brown Bros.	1,200	Serff Bros.*	835
Dover, Wood, & Co.	1,127	T. H. Roberts	825
A. Brickell	1,115	B. Stone (late)	1,200
R. T. Cox	1,114	J. Webb (late)	1,195
Wilkin	1,094		

* Accepted.

LONDON.—For making up and paving Epple-road, Sec. I., for the Vestry of the Parish of Fulham. Mr. W. Sykes, New Streets Surveyor:—

Name of Contractor.	R.*	Paving.				
		Y.S.†	V.S.‡	I.S.§	A.S.‖	S. G.¶
	£	£	£	£	£	£. s. d.
Stuart's Granolitic Co.	—	—	—	—	—	86 8 6
E. Rogers & Co.	219	—	—	—	—	—
Tomes & Winnjey	199	114	108	102	93	—
Nowell & Robson	247	—	—	—	93	—
Imperial Stone Co.	—	—	—	93	—	—

* Roadway. † York stone. ‡ Victoria stone. § Imperial stone. ‖ Adamant stone. ¶ Stuart's granolitic.

LONDON.—For erecting new stabling, cart-sheds, and sundry general works, at the Larkhall Brewery, Larkhall-lane, S.W., for Messrs. Best & Co. Messrs. Treadwell & Martin, architects, 2, Waterloo-place, S.W.:—

Ashby Bros.	£4,643	W. Johnson & Co.	£3 781
Styles & Son	4,540	C. F. Kearley	3,710
Patman & Fotheringham	4,413	F. & H. F. Higgs	3,657
Turtle & Appleton	3,791	L. Whitehead & Co.*	3,555

* Accepted.

LONDON.—For rebuilding the "Lord Nelson" beerhouse, Bidder-street, Canning Town, E., for Messrs. Ind. Coope, & Co. (Limited), Romford. Essex. Messrs. Wigg, Oliver, & Hudson, architects, 80, Leman-street, E. No quantities:—

		with additional room.
Norton & Son	£765 0 0	£825 0 0
North Bros.	745 0 0	800 0 0
G. E. Weston	752 0 0	777 0 0

LONDON.—For re-constructing sewers and other works connected therewith, in Tavistock-place, Endsleigh-gardens, and Upper Woburn-place, for the Vestry of St. Pancras:—

Adams	£15,487	W. Neave & Son	£10,740
Pizzey	14,972	C. W. Killingback & Co.	10,740
Mowlem	13,200	J. Neave*	9,946
B. Cooke & Co.	12,000		

* Accepted.

LONDON.—For painting and other works at Abbey Mills Sewage-station, Bow, for the London County Council. Mr. A. R. Binnie, Engineer:—

Mowlem & Co.	£1,597 0	Marsland	£732 0
Gibbin & Son	1,400 0	C. J. Court	450 0
E. Proctor	980 0	C. N. Phillips	399 0
Munday & Son	927 0	A. J. Prout	395 0
Vigor & Co.	796 10		

LONDON.—For the erection of a workshop for the blind of Kent, on site of Nos. 49, 51, 53, and 55, London-street, Greenwich. Messrs. George Lansdown & Harriss, architects:—

R. H. Bax	£7,499	D. Charteris	£6,438
J. G. Gorkam	7,238	S. J Jerrard	6,389
James Morter	6 960	H. L. Holloway	6,233
H. & E. Lea	6 849	Stimpson & Co.	6,150
J. Marsland	6,637	J. F. Collinson*	5,895
Hart Bros.	6 597		

* Accepted subject to certain reductions.

LONDON.—For repairing and re-decorating "St. Vincent's, Putney:—

Jarvis, Surbiton (accepted) £240 0 0

LONDON.—For the erection of seven semi-detached houses on the Earlsfield Estate, Wandsworth, S.W. Mr. J. Johnson, architect, 22, Buckingham-street, Strand:—

Barlow & Roberts, 41, Aldermanbury (accepted), £2,450 0 0

LONDON.—For alterations and additions to the Central Meat Market, for the Commissioners of Sewers. Mr. Wm. Haywood, Engineer. Mr. D. Cubitt Nicholls, Surveyor:—

Wm. Neil	£1,061 9 6	Rowe Bros.	£932
Jackson Bros.	1,008 0 0	C. N. Phillips	902
S. J. Scott	969 0 0	J. J. Robson	898
B. E. Nightingale	958 0 0	Mowlem & Co.	897
Dove Bros.	945 0 0	J. Allen & Sons*	829
Perry & Co.	935 0 0		

* Accepted.

[Engineer's estimate, £824.]

LONDON.—For alterations at "The Woolpack Tavern," Hart-street, Wood-street, Cheapside, E.C., for Mr. Walker. Mr. H. I. Newton, architect:—

Drew & Cadman	£1,079	Marks	£1,012
Patman & Fotheringham	1,043	Edward & Medway	992
Burman & Sons	1,025	Dearing & Son	970

LONDON.—For new loose-boxes and stabling, Liverpool-road, Islington, for the Vestry of St. Mary. Mr. J. Patten Barber, Surveyor. Quantities by Mr. Henry Lovegrove:—

Rowe Bros. (accepted), Camden Town £973 0 0

[For full list, see *Builder* for October 17, p. 301.

LONDON.—For painting and repairs to five houses in Lausanne-road, Peckham. Mr. J. J. Downes, architect, 11, The Parade, Lewisham High-road :—

Soper	£145 5 6	A. Wilson & Co.	£140 16 0

LONDON.—For alterations and additions to the London and Brighton Railway Hotel, Queen's-road, Peckham, S.E., for Mr. W. W. Martin. Mr. E. J. Strevens, architect, 246, Camberwell-road, S.E. :—

Geo. Ford	£445 17	W. Croaker	£407 15
Taylor	409 0	King & Son (accepted)	400 0

LONDON.—For alterations and additions to butcher's-shop, for Mr. John Palmer, 27, Camberwell-road, S.E. Mr. E. J. Strevens, architect, 246, Camberwell-road, S.E. :—

J. Tyreman	£397	J. H. Pugh	£360
Canning & Mullins	379	Geo. W. Ford (accepted)	350

LONDON.—For alterations and additions to butcher's-shop, for Mr. John Palmer, 71, New Cut, Lambeth, S.E. Mr. E. J. Strevens, architect, 246, Camberwell-road, S.E. :—

F. Tarrant	£370 0	J. H. Pugh*	£293 12
A. Blake	318 0		

* Accepted.

RAINHAM (Essex).—For reinstating, after fire, the Phœnix Hotel, Rainham, Essex. Messrs. Wigg, Oliver, & Hudson, architects, 80, Leman-street, E. Quantities by Messrs. C. Stanger & Son :—

J. H. Cocks	£1,450	T. Norton & Son	£1,198
T. Little	1,415	Dowsing & Davis	1,193
W. Gladding	1,387	John Bentley	1,174
W. Gregar & Son	1,237	J. S. Hammond & Son*	1,075

* Accepted.

SOUTHEND (Essex).—For making-up, curbing, and paving Prittlewell-street and Coleman-street, for the Southend Local Board. Mr. Dodd, A.M. Inst. C.E., Surveyor :—

E. & W. Isles	£1,542 0 0
W. H. Wheeler, Sumner-street, Southwark*	1,505 4 8

* Accepted

SURBITON.—For alterations, Catherine-road :—

Gaze	£759 5	Adkins	£732 10
Piller	735 0	Jarvis, Surbiton*	726 10

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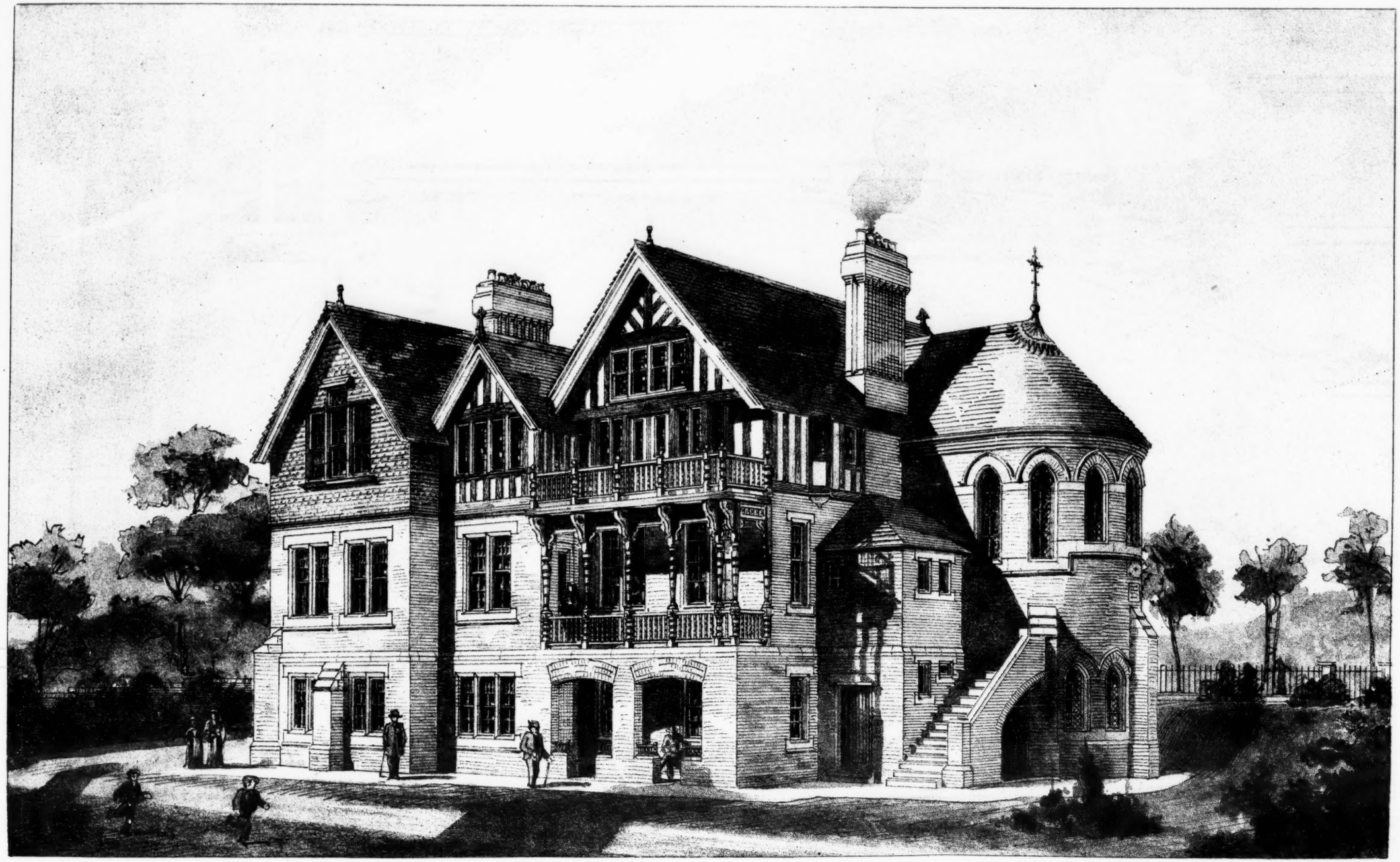

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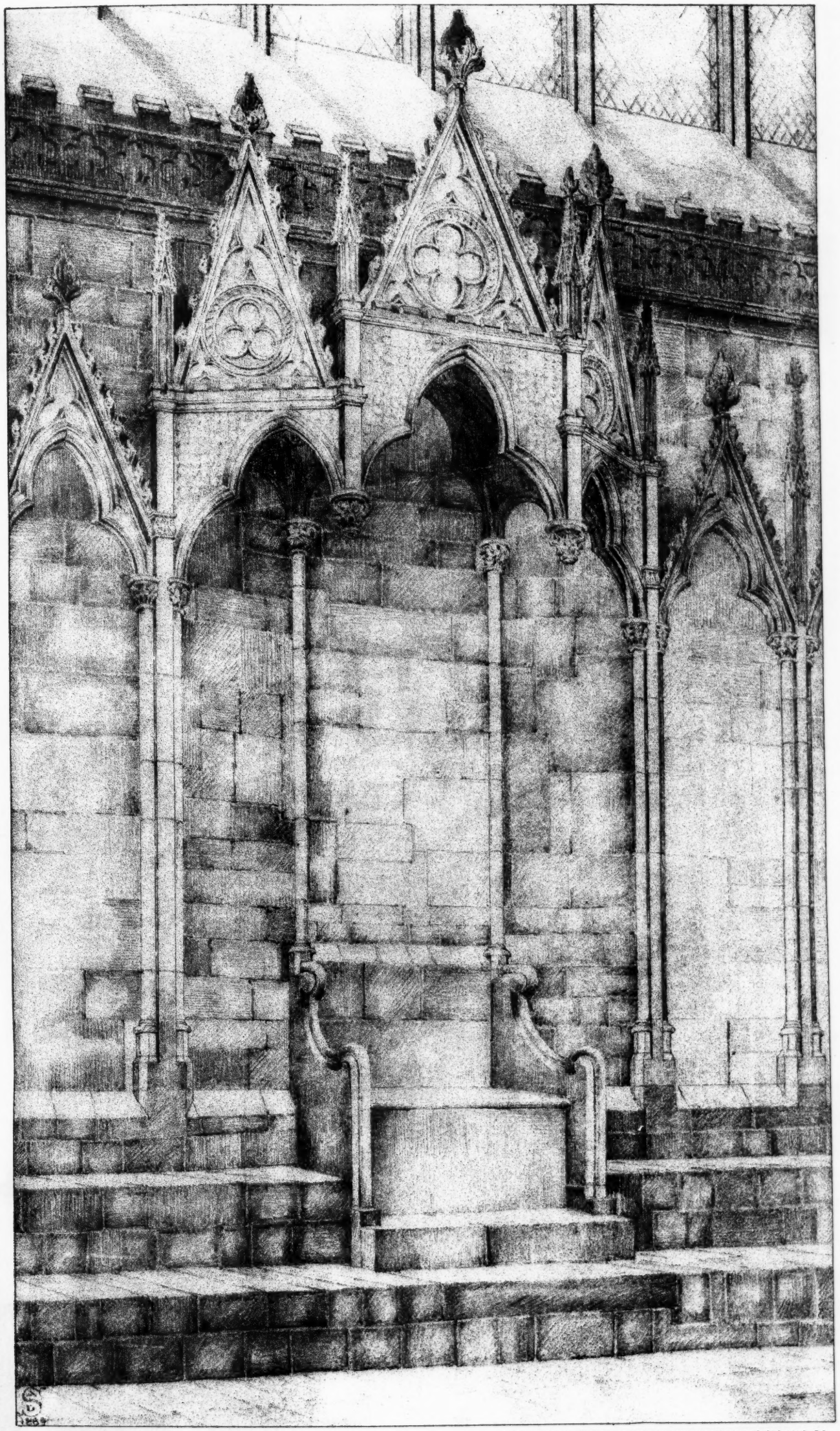

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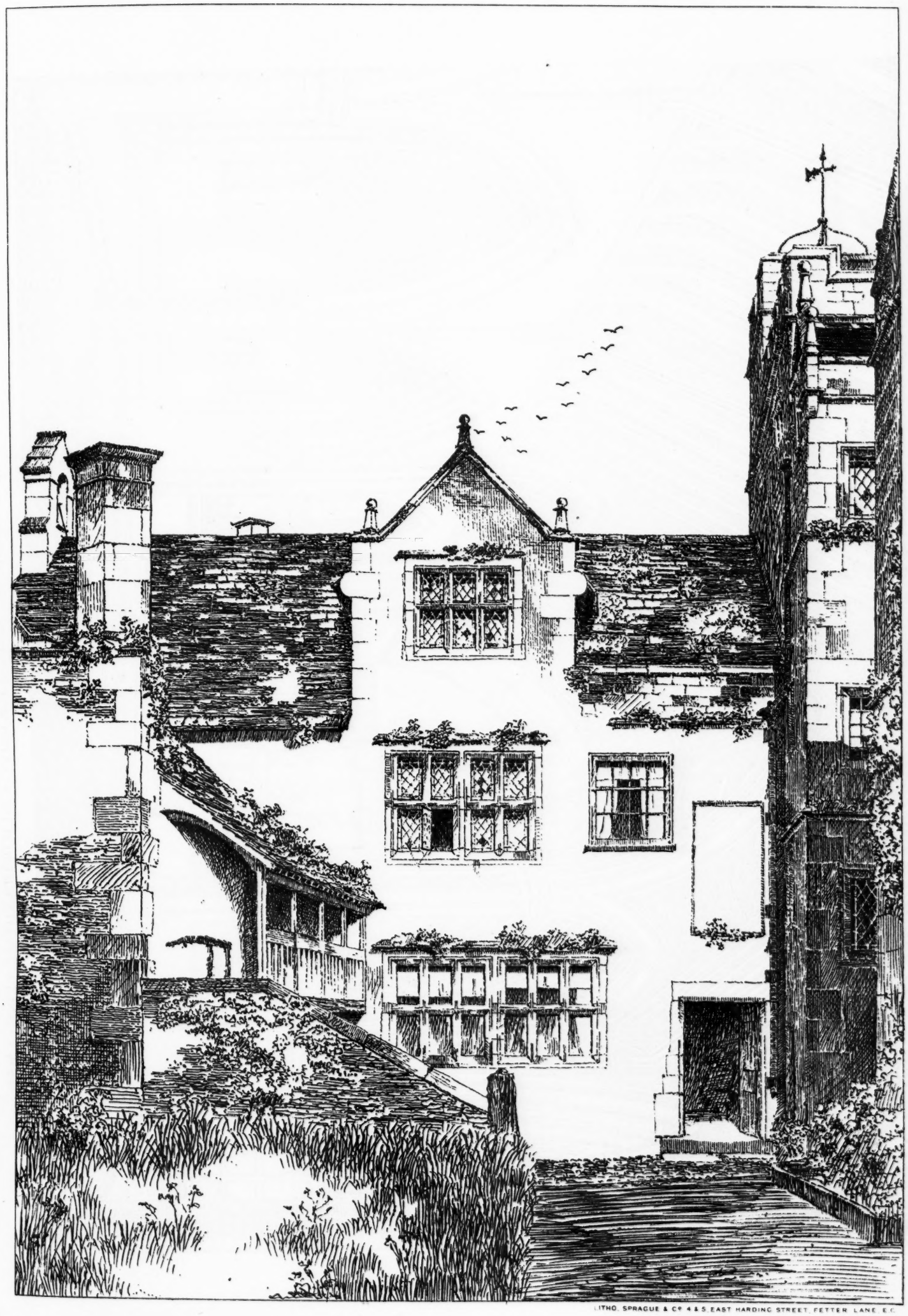

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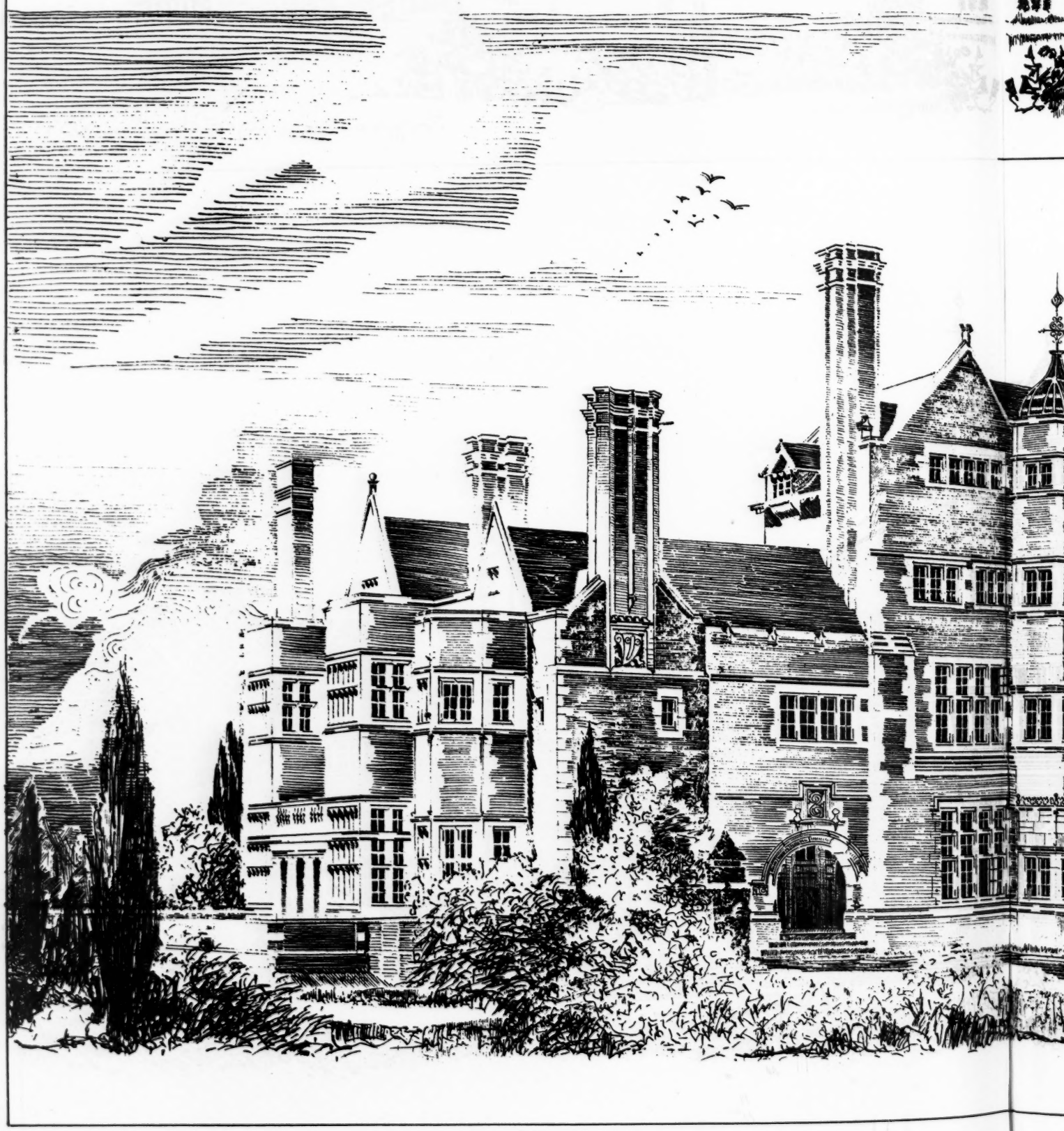

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